CCD-F335E

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

SONY
SONY
Handycam
CCD
Video 8

Handycam
Video 8

U MECHANISM

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 20.051 mm/sec. LP: Approx. 10.058 mm/sec.
Recording/playback time	SP mode: 1 hour 30 min (P5 – 90) LP mode: 3 hours (P5 – 90)
Fast forward/rewind time	Approx. 6.5 min. (P5 – 90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 6 × power zoom lens f = 9 – 54 mm, F1.4 with macro Filter diameter: 46 mm
Auto focus system	TTL
Colour temperature	AUTO HOLD INDOOR 3,200 K OUTDOOR 5,800 K
Minimum illumination	7 lux
Illumination range	7 lux–100,000 lux (0.7–9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic Back light adjustment

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio output	Phono jack, –7.5 dBs, at output impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5 V DC
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, –66 dBs, low impedance With 2.5–3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

Display in the viewfinder

Mode and caution indicators
Caution: ⊗/⏏/💧/📼/🔋
Mode: REC/STBY/PAUSE/
▶, ◀ (Editsearch)/
⏩/⏪/STILL/PLAY/
▶▶/◀◀/SLOW/❚❚▶
SP/LP mode, FOCUS, ▧,
WHITE BALANCE, ZERO MEM, shutter speed, title colour, title scroll mode, title reverse mode
Recording/battery lamp

– Continued on next page –

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

General

Power requirements	Battery compartment 6.0 V (battery pack)/7.5 V (AC power adaptor)/9.0 V (EBP-55)
Power consumption	6.9 W (camera recording) including the viewfinder
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 122 × 153 × 312 mm (w/h/d) ($4\frac{7}{8} \times 6\frac{1}{8} \times 12\frac{3}{8}$ in.) including lens hood
Weight	Approx. 1.2 kg (2 lb 10 oz) excluding the battery and cassette
Microphone	Electret condenser microphone, omni-directional monaural type
Supplied accessories	Battery pack NP-55 (1) AC power adaptor AC-V30 (1) RFU adaptor RFU-89EA (1) Aerial selector (1) Screwdriver (1) Shoulder strap (1) Lithium battery CR2025 (1)

Design and specifications are subject to change without notice.

Your dealer may not handle some of the above listed optional accessories. Please ask the dealer for detailed information about the optional accessories available in your country.

Note

This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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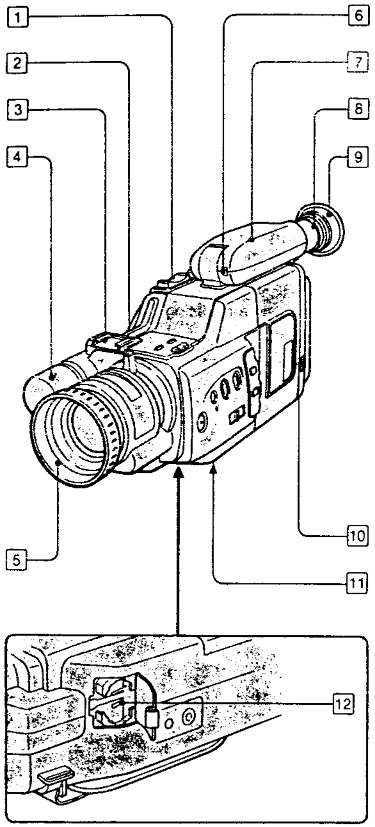
The color reproduction standard frame is contained after the adjustment element location of camera adjustment parts.

SECTION 1
GENERAL

Location and Function of Parts and Controls

A-1



For details on the use of each control, refer to the pages indicated in the circle.

A-1

1 **Power zoom button** ㉗

2 **Zoom lever and macro button** ㉗ ㉘

3 **Accessory shoe**
Attach an external microphone, video light, etc.

4 **Built-in microphone (monaural)**

5 **Lens hood**
Also functions as focus ring.

6 **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

7 **Viewfinder** ⑬
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

8 **Viewfinder lens adjustment ring** ⑭
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

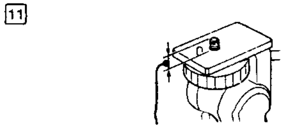
9 **Eyecup**

10 **BATT (battery eject) knob** ⑨

11 **Tripod receptacle (bottom)**

12 **Lithium battery compartment** ⑫

11

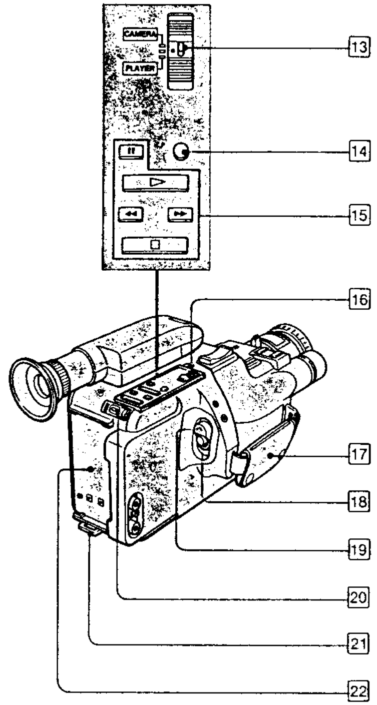


Note when attaching a tripod not manufactured by Sony
When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5 mm.
Otherwise the screw may damage the inner parts of the camera.

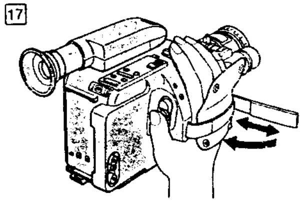
This section is extracted from instruction manual of AEP, UK model.

Location and Function of Parts and Controls

A-2



17



A-2

13 **POWER switch**
CAMERA: For camera recording
PLAYER: For playing back or editing tapes
OFF: Power off

14 **DATA SCREEN button** ㊾
Press to display the indication on the viewfinder screen on the TV.

15 **Tape transport buttons**
▷ (playback)
►► FF (fast forward)
◄◄ REW (rewind)
□ (stop)
❚❚ (pause)

16 **REC MODE (recording mode)/EDIT switch** ⑯ ㊻
Switch it depending on the operating mode.

Mode	Recording	Playback	Editing
Setting	REC MODE SP LP	EDIT	EDIT
Function	Recording mode switch	EDIT switch	

17 **Grip strap**
Adjust the length so that your thumb can easily manipulate the START/STOP button.

18 **START/STOP button**
Press to start and stop camera recording.

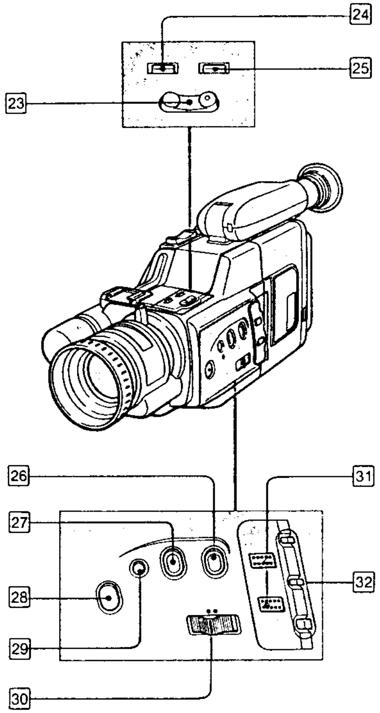
19 **STANDBY switch**
Slide up to STANDBY to set the unit to recording pause mode.

20 **EJECT (cassette eject) button** ⑬

21 **Hook for shoulder strap**
Attach a shoulder strap.

22 **Battery mounting surface**

A-3



Location and Function of Parts and Controls

A-3

23 **EDITSEARCH (and recording review) button ⑲ ㊱**

24 **ZERO MEM (zero memory) button ㊱**
Used to memorize the counter zero point.

25 **COUNTER RESET button**
Press to reset the counter to zero.

26 **SHUTTER SPEED button ㉕**
Used to select the shutter speed.

27 **FOCUS button ㉑**
Used for manual focusing.

28 **BACK LIGHT button ㉔**

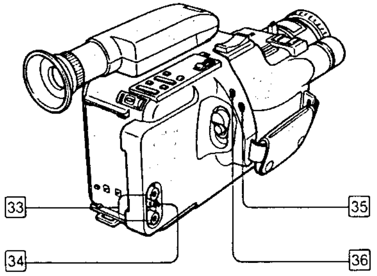
29 **WHITE BAL (white balance) button ㉓**
Used for manual white balance adjustment.

30 **AUTO LOCK switch ⑮**
Normally set to the AUTO LOCK position (green mark).
To adjust the focus, white balance, back light or shutter speed manually, set to the right position (white mark).

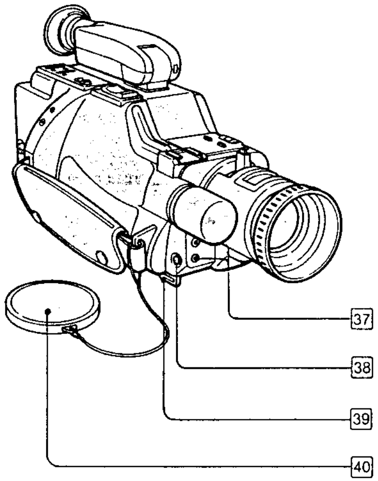
31 **DATE (+) and TIME (NEXT) buttons ㉙**
Press to display or turn off the date or time.

32 **SUPERIMPOSE buttons ㉜**
Used to record the title.
MEM (memory) button
COLOR/MODE button
ON/OFF button

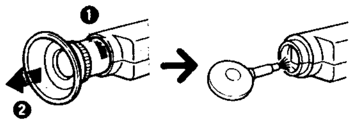
A-4



A-5



A-6



Location and Function of Parts and Controls

A-4

33 **VIDEO/AUDIO OUT (output) jacks (phono jacks)**

34 **RFU DC OUT (RFU adaptor DC output) jack (special minijack)**
Supplies power to the RFU adaptor.

35 **🎧 (earphone) jack (minijack)**

36 **REMOTE connector (stereo mini-minijack)**
Connect an optional GP-80 Remote Commander or wired Remote Commander RM-95 (available in near future).
Do not connect other equipment.

A-5

37 **MIC jack and DC OUT (microphone power output) jack**
Connect an external microphone.
The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.

38 **REC START/STOP button for low angle ⑰**

39 **Hook for shoulder strap**

40 **Lens cap**

To remove dust from inside the viewfinder A-6
Detach the eyecup as illustrated and clean the surface of the cathode ray tube with a blower.

Power Sources

Selection of Power Sources

This manual shows the operations on one of the following power sources.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V30 or AC-V55 (page 11)
Outdoors	Battery pack	Battery pack NP-55 or NP-77 (page 9) Battery case EBP-55 (page 10)
In the car	12 V or 24 V car battery	DC pack DCP-55 (page 11) (DCC-16B car battery cord supplied)

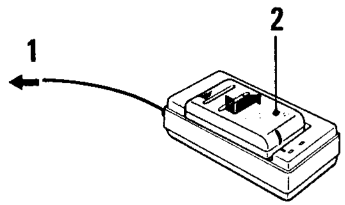
Notes on power source

- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not to be used, keep it in its case.

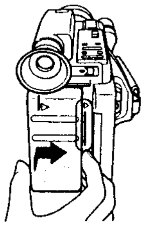
Optional Accessories for Charging

- **AC-V55 AC power adaptor**
  Two battery packs can be charged simultaneously.
- **BCA-70 or BCA-80 battery charge adaptor, ACP-88 AC pack and NPA-55 battery adaptor**
  For charging, insert an NP-55 into the NPA-55.

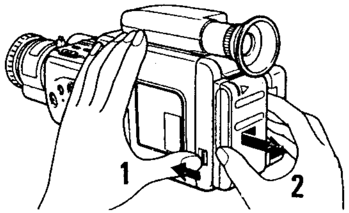
B-1



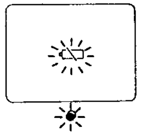
B-2



B-3



B-4



Battery Pack — NP-55 or NP-77

First, charge the battery pack. B-1
Use the AC-V30 AC power adaptor.
The charging time is about 1 hour for an NP-55 battery pack, or about 2 hours for an NP-77 battery pack.

1 Connect the AC-V30 to a wall outlet.
2 Attach the battery pack to the AC-V30.
Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack, slide it as illustrated.

To attach the battery pack to the video camera recorder B-2
Align the right side of the battery pack with the line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

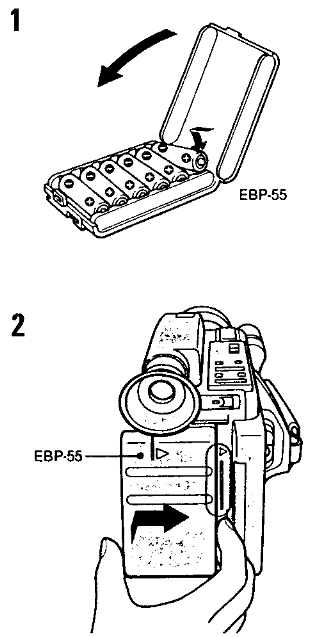
To remove the battery pack B-3
While pressing the BATT knob in the arrow direction, slide and pull out the battery pack as illustrated.

Battery life
A fully-charged NP-55 battery pack provides approximately 40 minutes of continuous camera recording, and an NP-77 provides approximately 80 minutes of continuous camera recording.

When the video camera recorder is not in use, remove the battery pack.
If the battery is installed, even if the POWER switch is set to OFF, a very small amount of electric current flows.

When the battery becomes weak B-4
The ▭ indication and red lamp blink in the viewfinder.
Replace the battery pack with the fully charged one.

B-5



Notes

- The video camera recorder consumes power even in the recording pause mode. When recording short scenes using the recording pause mode, the battery life is less than half that of continuous recording.
  When recording is not to be started soon, turn off the power with the STANDBY switch.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

Using the NP-22 battery pack
A fully-charged NP-22 battery pack can operate this unit for approximately 60 minutes. For using the NP-22, an optional NPA-22 battery adaptor is necessary.

Battery Case EBP-55 B-5

1 Insert the six R6 (size AA) alkaline batteries into the battery case.
2 Align the right side of the battery case with the line on the recorder, and while pressing the battery case, slide it to the right.

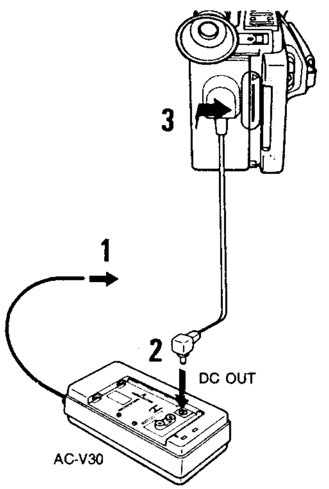
To remove the battery case
While pressing the BATT knob on the recorder, slide and pull out the battery case.

Battery life
With fully-charged batteries, the battery case provides approximately 40 minutes of continuous camera recording when used at room temperatures.

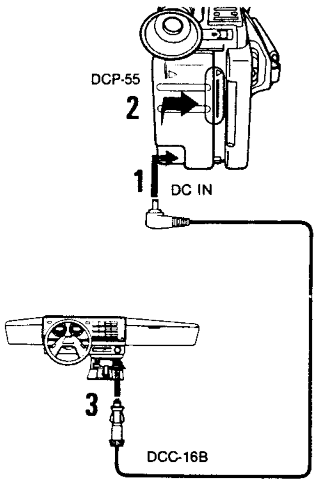
Notes on the battery case

- Be sure to use the alkaline batteries.
- The battery case cannot be used in a cold place.
- The ⏢ indication may not blink when the batteries in the battery case become weak, as the voltage of the battery lowers suddenly. If the cassette compartment does not open, replace the batteries.

B-6



B-7



House Current — Using AC Power Adaptor B-6

1 Connect the AC power adaptor to a wall outlet.
2 Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
3 Align the right side of the connecting plate with the line on the recorder, and while pressing the connecting plate, slide it to the right.

To remove the connecting plate for the AC power adaptor from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the connecting plate.

The optional AC-V55 AC power adaptor can also be used to operate this recorder on house current.

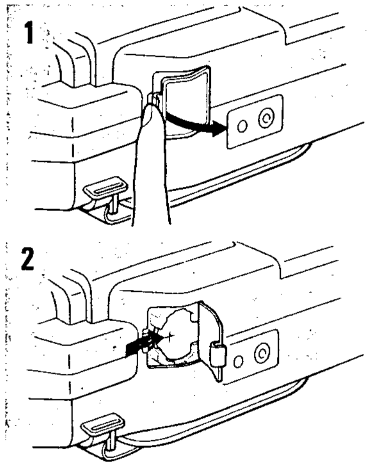
Car Battery — Using the DC Pack B-7

1 Insert the DCC-16B car battery cord supplied with the DCP-55 DC pack into the DC IN jack on the DC pack.
2 Align the right side of the DC pack with the line on the recorder, and while pressing the DC pack, slide it to the right.
3 Connect the DCC-16B car battery cord to the cigarette lighter socket of a car (12 V or 24 V).

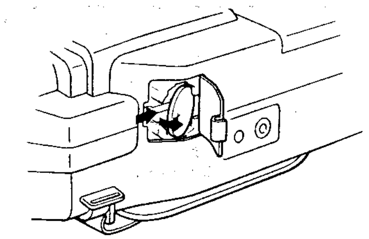
To remove the DC pack from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the DC pack.

The optional AC-V55 AC power adaptor and the DCC-16AE car battery cord can also be used to operate this recorder on a 12V or 24V car battery.

C-1



C-2



Power Sources

Lithium Battery C-1

To insert the lithium battery
This unit uses a lithium battery to activate the clock and keep a title in memory. Before operating the unit for the first time, install the supplied lithium battery:

1 Open the cover of the lithium battery compartment on the bottom.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

To remove the lithium battery C-2
Press the side of the battery in the direction as indicated for installation.

Lithium battery life
Approximately 1 year in normal operation.
When the lithium battery becomes weak, the time indication will blink on the viewfinder screen for about 5 seconds.
In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.
After replacing the battery, readjust the date, time and title. (If the battery is replaced with the battery pack attached, the readjustments are not necessary.)

Notes on lithium battery
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

Selection of the Automatic or Manual Adjustments

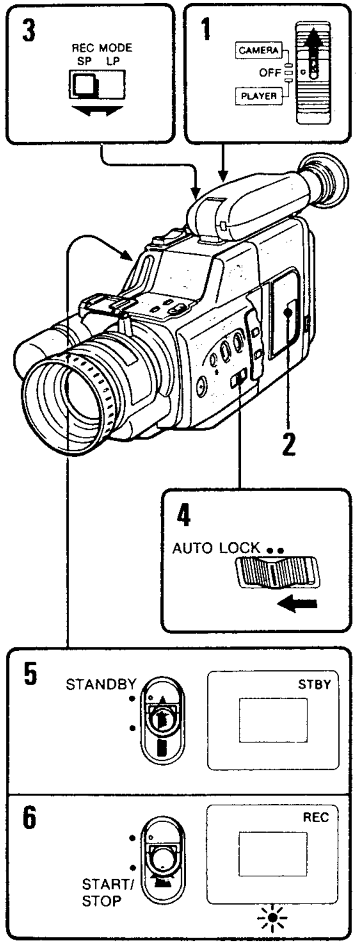
When the AUTO LOCK switch is set to AUTO LOCK (green mark), the white balance, shutter speed (1/50), focus and iris are adjusted automatically. But under certain circumstances, manual adjustment is better for effective recording.

When the AUTO LOCK switch is set to the right position (white mark), each manual function works as follows.

Each push of the button cyclically changes each function and the indication on the viewfinder changes.	
WHITE BALANCE See page 22.	No indication (Auto) → HOLD → ☀ → ⁘
SHUTTER SPEED See page 25.	No indication (1/50) → 120 (1/120) → 250 (1/250) → 1000 (1/1000) → 2000 (1/2000) → 4000 (1/4000)
FOCUS See page 20.	Auto focusing zone (Auto) → ■ (Manual)
BACK LIGHT See page 24.	No indication → ▨ (Back light)

Notes
- Just after the battery pack is attached to the recorder, even if the AUTO LOCK switch is set to the right position, the AUTO LOCK function will work.
- If the AUTO LOCK switch is set to AUTO LOCK after each function is adjusted manually, and then set to the right position again, the previous manual setting willl be recalled.

F-1



Easy Camera Recording with Automatic Adjustment

How to Record

F-1

1 While pressing the small button, set the POWER switch to CAMERA.
2 Insert the cassette.
3 Set the REC MODE selector to LP or SP, according to the length of the programme to be recorded.
4 Set the AUTO LOCK switch to AUTO LOCK (green position).
5 Slide the STANDBY switch up.
  The unit will enter the recording pause mode.
6 Press the START/STOP button.
  Recording will start.

Check on the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording
Press the START/STOP button again.
The unit will enter the recording pause mode. Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

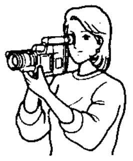
To check the last portion of the previous recording (Recording review)
1 Set the recorder in recording pause mode by pressing the START/STOP button.
2 Press the – EDITSEARCH button momentarily.

The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

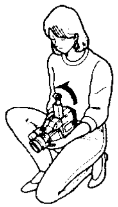
If the picture has not been recorded
The video head may be contaminated. Clean the heads using the Sony V8-25CL video head cleaning cassette.

After using
Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the center button when setting the switch to OFF.)

F-2



F-3



Easy Camera Recording with Automatic Adjustment

Hold the camera recorder as in the illustration.
If your nose touches the recorder, adjust the angle of the viewfinder. F-2

F-3

For low angle recording
The viewfinder can be turned 90 degrees up.
1 Slide the STANDBY switch up.
2 Press the START/STOP button for low angle on the right front.

Note on power source
If the POWER switch is moved during recording, the tape will stop.

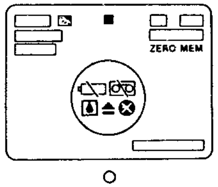
Notes on light sources
- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

Notes on playback on another VTR
- To view the picture which has been recorded on this unit, set the monitor switch of the recorder for playback to the STD (standard) position.
- When recording on this unit using a tape on which PCM stereo sound has previously been recorded, set the monitor switch of the video cassette recorder for playback to the STD (standard) position. Otherwise, the sound may not be heard or may be distorted.

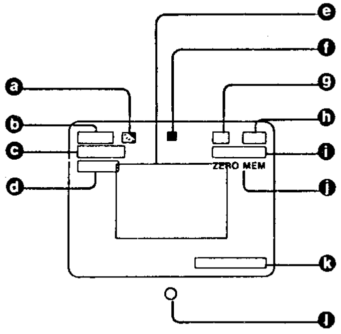
Notes on automatic adjustment
- During recording with auto focusing, do not turn or stop the focus ring (lens hood) forcibly.
- Keep the lens clean.

The camera recording with automatic adjustment may not produce optimum results under certain conditions. In this case, manually adjust the focus, white balance, back light and shutter speed. See pages 20, 22, 24 and 25.

F-4



F-5



Indications inside the Viewfinder

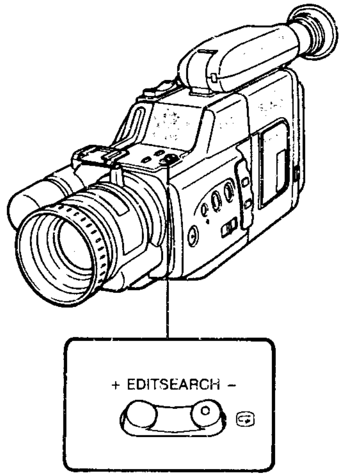
Indications for caution F-4

⌂	Slow blinking • The battery is weak. Fast blinking • The battery is exhausted.
⊠	Slow blinking • No cassette is inserted. • The tab on the cassette is out (red). Fast blinking • The tape is at its end.
⏏	Blinking • A fault has occurred in the unit. See page 59.
⊗	Blinking • The gap of the video head is clogged. (Head contamination) See page 59.
▣	Blinking • Moisture has condensed inside the unit. See page 53.

Indications for showing the function in use F-5

ⓐ	The back light function has been activated.
ⓑ	Indicates the white balance mode.
ⓒ	Indicates the title mode.
ⓓ	Indicates the shutter speed.
ⓔ	Indicates the auto focusing zone.
ⓕ	• Lights when the focus function has been set to manual. • Blinks when the auto focus function may not work correctly due to low light or low contrast. See page 20.
ⓖ	Indicates the recording/playback mode (SP/LP).
ⓗ	In the VTR operation mode, this indicates the tape transport function.
ⓘ	Indicates the tape counter.
ⓙ ZERO MEM	Blinks when the ZERO MEM button has been pressed.
ⓚ	Indicates the date or time.
ⓛ	• Lights in red during recording. • Blinks when the battery is weak.

F-6



Instant Playback on the Spot F-6

You can monitor the picture just recorded on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Press the "–" side of the EDITSEARCH button to view the playback picture in reverse.
4 Press the "+" side of the EDITSEARCH button to view the playback picture.

During Recording, to Record Again on the Previous Recorded Portion (Editsearch 1)

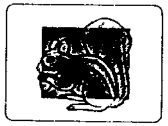
1 Slide the STANDBY switch up.
2 Monitor the picture on the viewfinder screen and locate the point from which the recording is to begin again with the EDITSEARCH button.
Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "–" side to reverse the picture.
3 At the desired point, release the EDITSEARCH button.
The unit will be set to recording pause mode.
4 Press the START/STOP button to start recording.

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

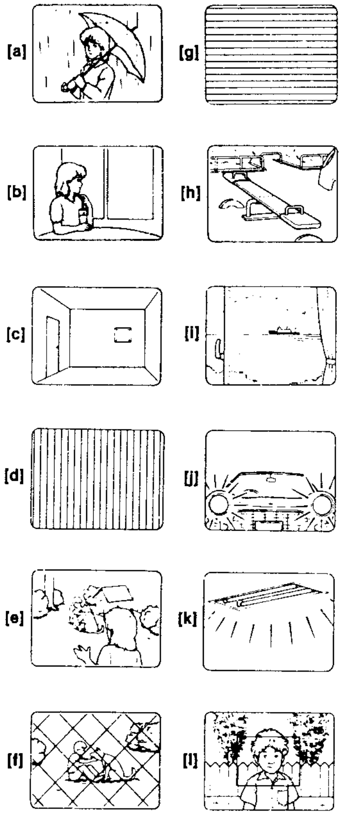
To monitor the sound while viewing the playback picture on the viewfinder screen
Connect an earphone to the ⓢ jack.
1 While pressing the small button, set the POWER switch to PLAYER.
2 Press the ◂◂ button to rewind the tape.
3 Press the ☐ button to stop the tape.
4 Press the ▷ button to start playback.

To stop the playback, press the ☐ button.

G-1



G-2



Manual Focusing

When the AUTO LOCK switch is set to AUTO LOCK, correct focusing is obtained in most cases if the subject is displayed in the auto focusing zone (illustrated in blue). G-1
Use manual focusing when shooting subjects difficult to focus automatically.

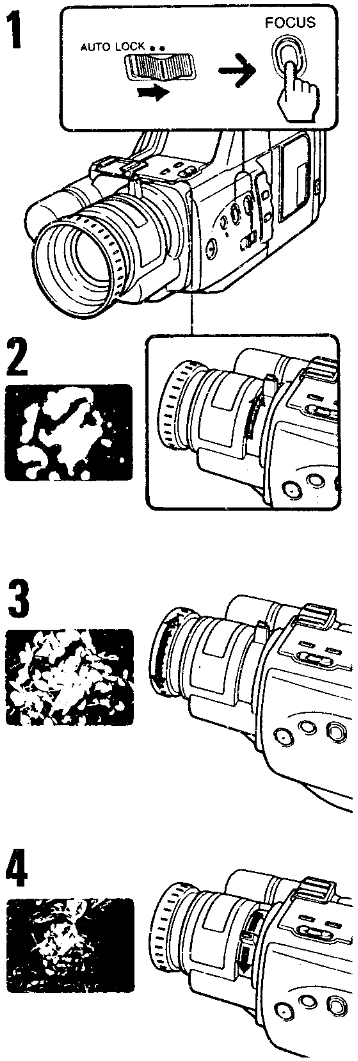
Poor Conditions for Auto Focusing G-2

[a] Insufficient light
[b] Too much bright light behind the subject
[c] Subjects with flat colours and less contrast — wall, sky, etc.
[d] Finely detailed repetitive patterns
[e] When the distance between subjects at the centre is extreme (e.g. one subject is close, the other is away)
[f] Subjects beyond screens, nets, etc. or when another subject passes across the camera
[g] Horizontal stripes
[h] Diagonal object
[i] When there is frosted glass between the shooting object and the recorder
[j] Bright object or object reflecting light
[k] When shooting under a fluorescent lamp at the shutter speed set to 1/250, 1/1000, 1/2000 or 1/4000
[l] When there is a high contrast background within the auto focusing zone (The background may be focused.)

Other Uses of Manual Focusing

- When the white mark inside the viewfinder blinks
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
  (When the AUTO LOCK switch is set to AUTO LOCK, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting, see page 28.

G-3



Notes

Since the auto focusing system of this unit detects the contrast of the video signal for accurate focusing, it does not function momentarily in these cases:

- When the shutter speed or the white balance is changed
- When the back light is being adjusted
- When lighting conditions change quickly
- When the zooming is changed from wide-angle to telephoto

It may take several seconds to get focus when the camera is rapidly panned from a distant subject to a near subject with less contrast. In this case, adjust the focus manually.

Note on automatic adjustment

During recording with auto focusing, do not turn or stop the focus ring forcibly.

To Focus Manually G-3

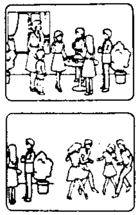
1 Set the AUTO LOCK switch to the right position and press the FOCUS button.
  The white mark (■) will be shown in the viewfinder.
2 Turn the manual zoom lever to the telephoto position (54) to make the subject as large as possible in the viewfinder.
3 Turn the lens hood (focus ring) to achieve sharp focus.
4 Set the desired shot length using the manual zoom lever.

Some helpful hints

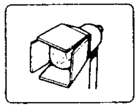
- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the lens surface.
- Recommended illumination of this unit is more than 300 lux (28 footcandles). If shooting is done indoors or under other circumstances where light is insufficient, video lights must be used for best results. Under adequate light condition, the depth of field in proper focus is wider and a sharper picture will be recorded.

H

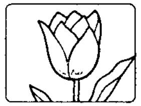
[a]



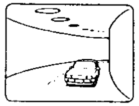
[b]



[c]

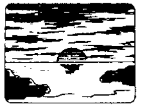


[d]



[e]

[f]



Manual White Balance Adjustment

When the AUTO LOCK switch is set to AUTO LOCK, the auto white balance function of this unit operates automatically in most cases. However, if it does not work correctly in the conditions listed below, adjust the white balance manually.

Difficult Conditions for Auto White Balance H

[a]	When lighting conditions change quickly	⁘
[b]	When the light source for the subject is different from that illuminating this unit, such as when the subject is in a spotlight, etc.	⁘
[c]	When shooting a mono-chromatic subject or the background is monochromatic	HOLD
[d]	When recording under a sodium lamp	⁘
	When recording under a mercury lamp	⁘
	When recording under a colour matching fluorescent lamp	☀
[e]	When recording outdoors, such as a night view, neon sign or fireworks	☀
[f]	When recording outdoors, such as scenes after sunset or scenes before sunrise.	☀

Manual White Balance Adjustment

To Adjust the White Balance Manually

1 While pressing the small button, set the POWER switch to CAMERA.
2 Set the AUTO LOCK switch to the right position.
3 Select the desired white balance mode by pressing the WHITE BAL button.
Each push of the WHITE BAL button cyclically changes the indication inside the viewfinder.

No indication (Auto) → HOLD → ☀ → ⁘

For the colour temperature and the white balance adjustment, see page 49.

To adjust the white balance precisely
1 Set the WHITE BAL button to auto mode (no indication).
2 Point the recorder to a white, flat object such as a white wall, paper, etc.
3 Press the WHITE BAL button to indicate the HOLD mark inside the viewfinder.
The correct white balance is memorized.

Notes
- When the power is turned off or the light source is changed, reset the HOLD mode again.
- The white balance is related to back light and shutter speed adjustment. When the shutter speed is adjusted manually, if the recorder is moved indoor to outdoor or vice versa, set the AUTO LOCK switch to AUTO LOCK and reset it to the right position again.
- When the recorder has been moved indoor to outdoor, or vice versa, slide the STANDBY switch up and point the recorder to a white object for about 10 seconds so that the white balance is adjusted properly.

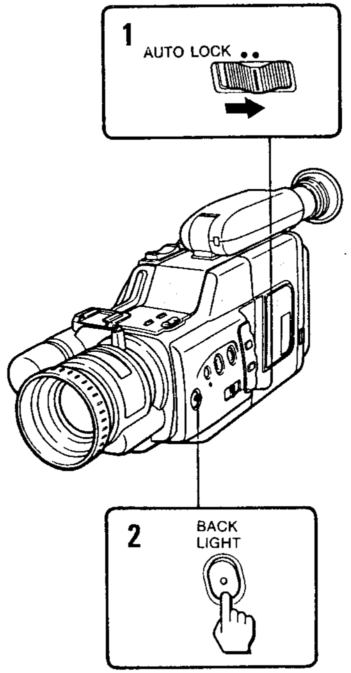
Back Light Adjustment I

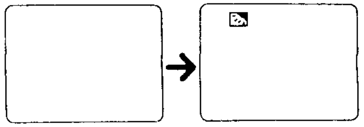
This unit adjusts the iris automatically. However, when shooting a subject that is backlit, set the AUTO LOCK switch to the right position and press the BACK LIGHT button. The ▧ indication appears on the viewfinder screen.

After shooting that particular scene, be sure to press the BACK LIGHT button again to release it. Otherwise the recorded picture will be too bright.

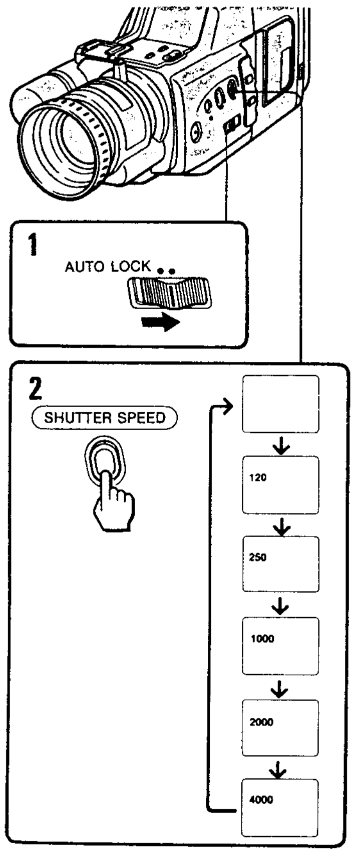
Note
The function will be released once the POWER switch is set to OFF.

I





J



Shutter Speed Adjustment

When a fast-moving subject is recorded at a normal shutter speed, the picture may not be seen clearly when played back. This can be improved by increasing the shutter speed.
The shutter speed of this unit can be selected from six speeds, 1/50 (normal speed), 1/120, 1/250, 1/1000, 1/2000 or 1/4000 second.
However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.
Choose an appropriate shutter speed according to the place and situation.
See the chart below for examples.

Example use	Recommended shutter speed
• On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/4000) • Recording the skiers	1/4000 or 1/2000
• On overcast days, recording a moving merry-go-round or jet-coaster • Recording outdoors from inside a vehicle (for stable shooting)	1/1000 or 1/250
• Instead of the ND2 filter (To reduce the exposure level to approx. 1/2) • Recording indoors (for stable shooting)	1/120

J

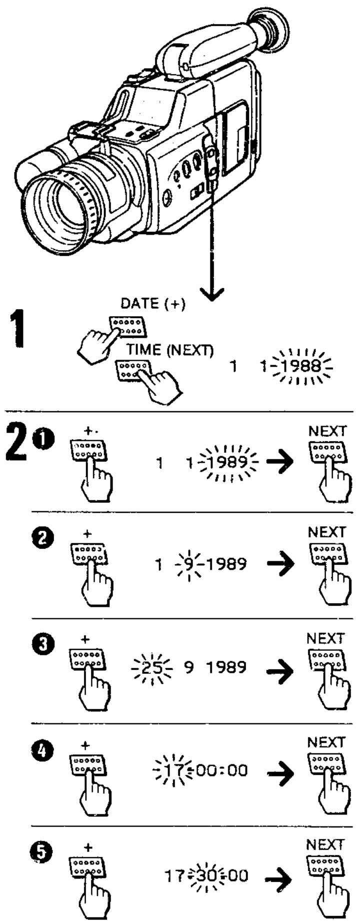
1 Set the AUTO LOCK switch to the right position.
2 Press the SHUTTER SPEED button repeatedly until the desired shutter speed inndication appears on the viewfinder screen.
Each time the SHUTTER SPEED button is pressed, the indication changes:
No
indication → 120 → 250 → 1000 → 2000 → 4000
(1/50) (1/120)(1/250)(1/1000)((1/2000)(1/4000)

Auto focus will not function when a shutter speed other than the normal speed and 1/120 is selected under a fluorescent lamp.
When shooting, use manual focusing.

Notes

- A ghost image will appear in still picture mode of this unit. To view a clear still or slow picture, use another video cassette deck with the clean still/slow function.
- When shutter speed 1/250 or faster is selected, recording must be done under sunlight or video light.
- When the recording is done under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary ("flicker").
- When the shutter speed is changed during a camera recording of a TV screen, the brightness of the recorded picture may vary.
- When a very bright object is shot at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.

M-1



Recording Date or Time

Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

- Make sure that the fully-charged battery pack and lithium battery are installed.
- Set the POWER switch to CAMERA, and slide the STANDBY switch up.

To Set Date and Time M-1

1 Press the DATE and TIME buttons simultaneously **for more than 3 seconds.** The date indication will appear in the viewfinder (date/time setting mode). The DATE button now functions as the + button and the TIME button functions as the NEXT button.

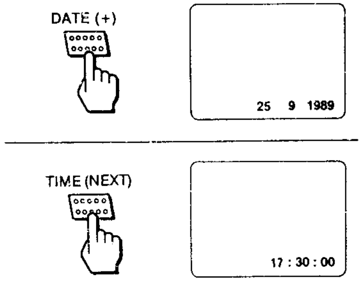
2 Adjust the ❶ year, ❷ month, ❸ day, ❹ hour and ❺ minute in sequence, following the illustration. First adjust the blinking digits with the + button, and then press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the TIME (NEXT) button again.

The + button can be pressed in two ways
- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.

M-2



Recording Date or Time

To check the preset date and time
Press the DATE or TIME button in the recording pause mode. When the same button is pressed again, the indication goes off.

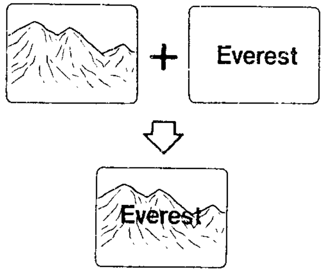
To readjust an incorrect date or time
Set the unit to date/time setting mode and press the NEXT button repeatedly until the incorrect digit blinks. Correct it with the + button and press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

To Record the Date or Time M-2

During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder screen.
The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME button again. The picture recording will continue.

N-1



Recording a Title

Before recording, memorize a title or figure. The memorized title or figure is superimposed onto the picture being recorded. N-1

The colour of the title or figure can be selected from 8 colours.

Make sure that the lithium battery is installed. See page 12.

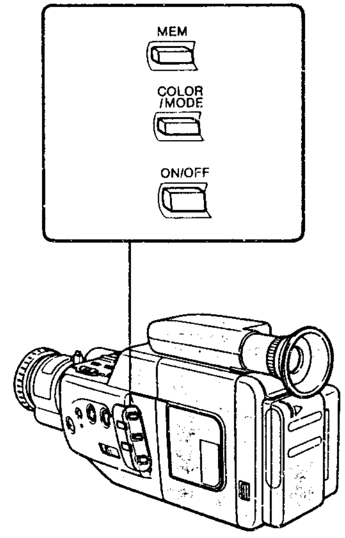
To make a desired title card
- Use a white and plane card and draw the title on it with a deep colour (black is recommended for the best result) in thick letters.
  If contrast is clear, a signboard can be memorized like the title card.
- When deciding the title size, check the effective picture size on your video monitor.

Before memorizing a title
- Fix the title card and the video camera recorder.
- Use of an appropriate light is recommended for a better result.

Function of the COLOR/MODE button
This button is used to select the title colour or title mode.

When the title is displayed	When the title is not displayed
Used as the COLOR button.	Used as the MODE button.
→WHT→BLUE→GRN→CYAN (white) (green) BLK←YEL←VIO←RED← (black) (yellow) (violet)	No title mode → ↑ → T → T↑ ↑: title scroll mode T: title reverse mode T↑: title reverse and scroll mode
Each push of the COLOR/MODE button cyclically changes the colour or mode.	

N-2



To Memorize the Title N-2

1. While pressing the small button, set the POWER switch to CAMERA.
2. Slide up the STANDBY switch to set the unit in the recording pause mode.
3. Point the camera to the title card and adjust the focus.
4. Press the MEM button to memorize the title.
5. Select the title colour while observing the colour indication in the viewfinder. Each push on the COLOR/MODE button cyclically changes the colour, as follows:

   WHT (white) → BLUE → GRN (green) → CYAN
   ↑ ↓
   BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

6. Press the ON/OFF button to turn off the title.

Notes
- The colour indication in the viewfinder is not recorded on the tapes.
- You can change the title colour even after starting the recording.

To check the title
To check the memorized title, press the ON/OFF button. To turn off the title, press the button again.

To Record the Title

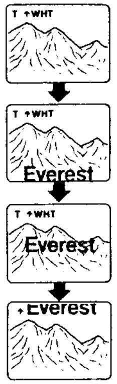
To record the title from the beginning
Press the ON/OFF button in recording pause mode, and then start recording.

To record during camera recording
Press the ON/OFF button at the point from which the title is to be inserted.
The memorized title will be recorded together with the picture.

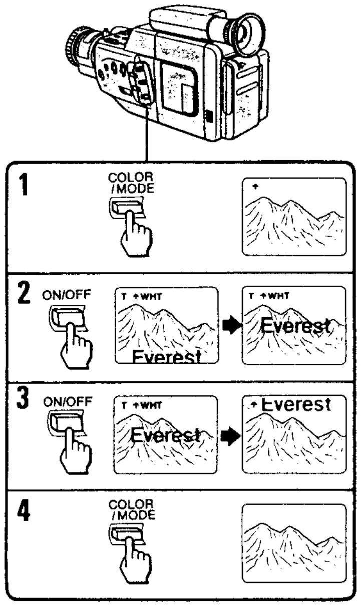
To stop recording the title
Press the ON/OFF button again. The picture recording will continue.

To record the same title several times
By repeating the above procedure, you can record the title as many times as desired.

N-3



N-4



To Scroll the Title from Bottom to Top

During recording, the memorized title can be scrolled from bottom to top. N-3

To check the scrolled title N-4

1 In the recording pause mode, press the COLOR/MODE button.
The arrow mark will be displayed.
2 Press the ON/OFF button.
The title will be displayed from bottom to centre.
3 Press the ON/OFF button again.
The title will be displayed from centre to top.
4 Press the COLOR/MODE button **three times.**
The arrow mark will disappear.

To record the scrolled title

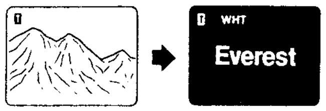
1 In the recording pause mode, press the COLOR/MODE button.
The arrow mark will be displayed.
2 Start the camera recording.
3 Press the ON/OFF button at the point from which the scrolled title is to be recorded.
4 After the title stops at the centre of the picture, press the ON/OFF button again.
The title is scrolled from centre to top.

To clear the scroll mode
After recording, press the COLOR/MODE button **three times.**

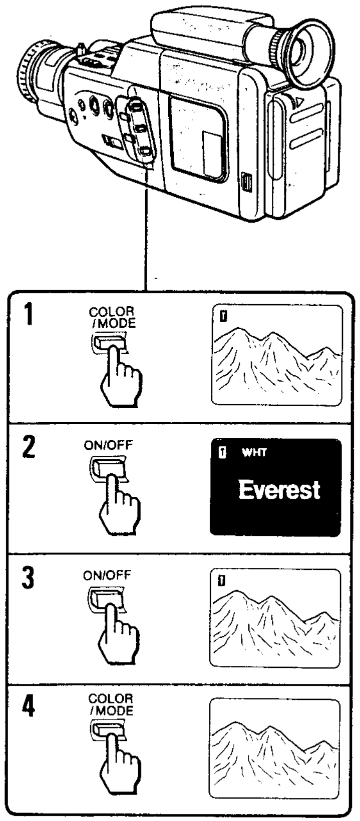
If you do not want to record the picture for the background
Point the recorder to a white, flat object such as a white wall, paper, etc.

To change the colour of the title
While the title is being scrolled or displayed at the centre, press the COLOR/MODE button.

N-5



N-6



To Reverse the Title and the Background

The colour scheme of the title and the background can be reversed. N-5

To check the reversed picture N-6

1 In the recording pause mode, press the COLOR/MODE button **twice.**
The 🆃 mark will be displayed.
2 Press the ON/OFF button.
The reversed title and background will be displayed.
3 Press the ON/OFF button again.
4 Press the COLOR/MODE button **twice.**
The 🆃 mark will disappear.

To record the reversed picture from the beginning

1 In the recording pause mode, press the COLOR/MODE button **twice.**
The 🆃 mark will be displayed.
2 Press the ON/OFF button.
3 Start the camera recording.
4 Press the ON/OFF button again to clear the reversed picture.

To record the reversed picture during recording

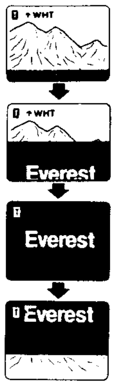
1 In the recording pause mode, press the COLOR/MODE button **twice.**
The 🆃 mark will be displayed.
2 Start the camera recording.
3 Press the ON/OFF button at the point from which the reversed picture is to be recorded.
4 Press the ON/OFF button again to clear the reversed picture.

To clear the reverse mode
After recording, press the COLOR/MODE button **twice.**

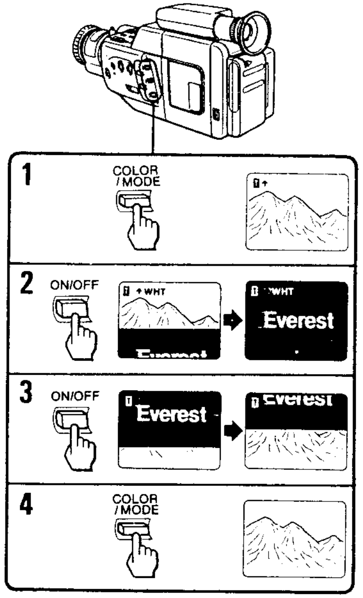
If you do not want to record the picture for the background
Point the recorder to a white, flat object such as a white wall, paper, etc.

To change the colour of the background
While the title is being displayed, press the COLOR/MODE button.

N-7



N-8



Recording a Title

To Scroll the Reversed Title N-7

To check that the reversed title is scrolled N-8

1 In the recording pause mode, press the COLOR/MODE button **three times.**
The T↑ mark will be displayed.
2 Press the ON/OFF button.
The reversed picture will be displayed from bottom to centre.
3 Press the ON/OFF button again.
The title will be displayed from centre to top.
4 Press the COLOR/MODE button **once.**
The T↑ mark will disappear.

To record the reversed and scrolled title

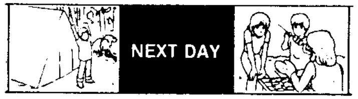
1 In the recording pause mode, press the COLOR/MODE button **three times.**
The T↑ mark will be displayed.
2 Start the camera recording.
3 Press the ON/OFF button at the point from which the scrolled title is to be recorded.
4 After the reversed title stops at the centre of the picture, press the ON/OFF button again.
The reversed title is scrolled from centre to top.

To clear the reversed scroll mode
After recording, press the COLOR/MODE button **once.**

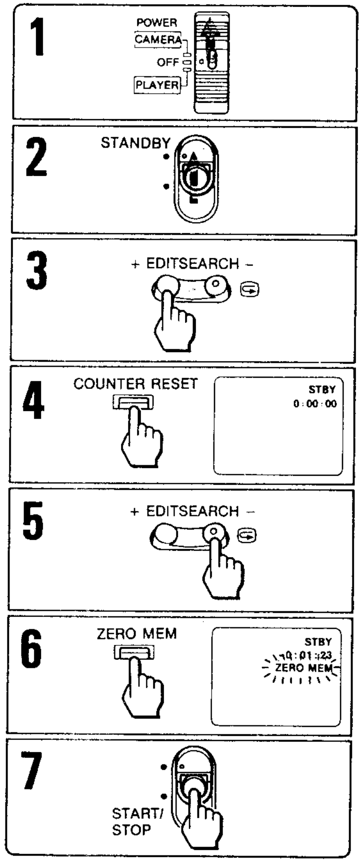
If you do not want to record the picture for the background
Point the recorder to a white, flat object such as a white wall, paper, etc.

To change the colour of the background
White the title is being scrolled or displayed at the centre, press the COLOR/MODE button.

O-1



O-2



Editsearch 2

You can insert (record) video and audio simultaneously from the camera onto any recorded tape. O-1

Operation O-2

- Monitor the picture being inserted on the viewfinder screen.
- Select the same tape speed as was used for already recorded portion with the REC MODE selector.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up to set the unit to recording pause mode.
3 Keep pressing the "+" or "−" side of the EDITSEARCH button and release the button at the point where the insert should **end.**
The unit will be set to recording pause mode.
4 Display the counter on the viewfinder screen and press the COUNTER RESET button.
The counter is reset to zero.
(For an accurate ending point, press the COUNTER RESET button immediately after the EDITSEARCH button is released and while the still picture is displayed.)
5 Keep pressing the "−" side of the EDITSEARCH button and release the button at the point where the insert should **begin.**
6 Press the ZERO MEM button.
The insert ending point is stored in memory.
7 Press the START/STOP button.
Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

To change the insert ending point
Press the ZERO MEM button to turn off the ZERO MEM indicator and repeat steps 3 through 6 above.

To insert the date or time
Follow steps 1 through 6 above, press the DATE or TIME button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

Editsearch 2

Notes on ZERO MEM mode
ZERO MEM mode is cancelled automatically in the following cases.

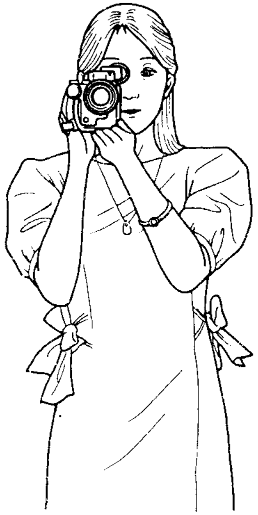
- When an insert recording is completed.
- When the position of the POWER switch is changed.
- When the power is turned off.
- When the cassette is ejected.

To restore it, press the ZERO MEM button again.

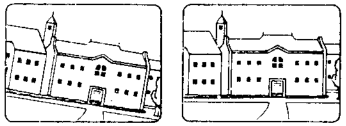
Notes

- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be turned off.
- When the inserted tape is played back, the picture may be distorted at the end of the inserted programme.

U-1



U-2



General

Hints for Better Shooting

Basic Camerawork

Getting stable pictures U-1

For hand-held shots, holding the recorder properly is the key.

- Hold the recorder firmly and secure it with the grip strap so that it is easy to manipulate the recorder with your thumb.
- Breathe gently.
- Place your right elbow firmly against your side.
- Stand opposite the subject and plant your feet firmly in a comfortable position.
- Place your eye firmly against the viewfinder eyecup.
- Try to keep both eyes open.
- Place your left hand under the camera recorder to support it. When adjusting the focus manually, make sure the unit does not move.

Use a tripod or monopod if possible

If you have a tripod for your still camera, it can also be used with the video camera recorder. Use a sturdy one.
If a tripod is not available, try placing the camera on a tabletop, wall, or any other flat surface of suitable height.

Keeping the horizontal plane level

Even if camera work is smooth and stable, shots can be tilted or off axis horizontally.

The horizontal plane can be easily determined by using the viewfinder frame as a reference. U-2

Understanding Light and Colour

Try to shoot scenes with the sun at your back

When shooting a scene when the light source is in back of the subject, the subject will be recorded too dark and the background too light.

The followings are also backlit conditions:
- The subject is indoors and there is a window behind the subject.
- Bright sources such as fluorescent or incandescent lamps are included in the scene.
- A person wearing white or glossy clothes in front of a white background. In this case, the face will be recorded too dark.
- The subject is outdoors and background is a cloudy sky.

For the sharpest pictures, you need the best light

For the most brilliant colour in your scenes, a sufficient light level must be maintained. If shooting is done indoors or under other circumstances where light is insufficient, lights must be used for best results.

What kind of light is best? Choosing the right lights

Photography lamps or halogen lamps are recommended. For best results, use of the Sony video lights are recommended as their weight and low heat output levels allow safe, direct connection to the camera.
For lighting of a wide area for easy use—reflector flood light
To emphasize the subject—use a reflector spotlight.

Precautions for using lights

Do not point the light at the recorder body. Instead, make sure that it is pointed parallel to the camera or away from it. Be especially careful with lights attached to the accessory shoe. The high heat from the lights pointed at the camera body can warp the cabinet.

For detailed instructions on proper use of lights, carefully read the instruction manuals that accompany them.

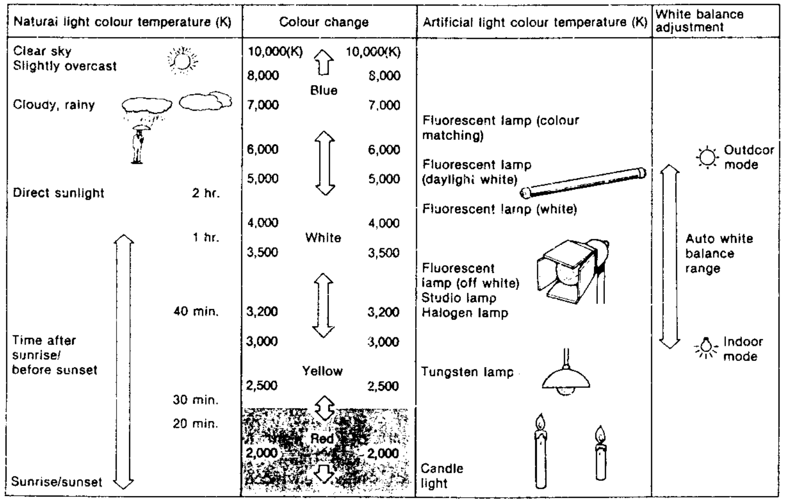
Brightness Levels

The single greatest influence on picture quality is the brightness level. Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

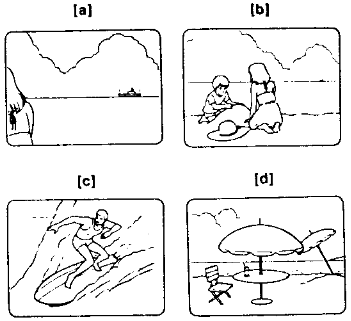
ND filter required	Unit: lux	Snow-covered mountains Snow fields Sandy beach, clear day in summer
Normal recording	100,000	Clear day, mid-day (100,000) Clear day, mid-afternoon (35,000) Overcast day, mid-day (32,000)
	10,000	Overcast day, one hour after sunrise (2,000)
	1,000	Office lit by fluorescent lamps, near window (1,000) Clear day, one hour before sunset (1,000) Department store counter (500–700)
	500	Station wicket (650) Office lit by fluorescent lamps (400–500) Room lit by two 30 W fluorescent lamps (300)
Video light recom-mended	300	Subway station platform (300)
	100	Arcade at night (150–200)
Video light required		Theater lobby (15–35) Candle light (10–15)
	10	

Colour temperature — how it effects white balance adjustment

If the temperature of an object continues to increase, it will eventually begin giving off light. At this time, there is a fixed relationship between the object's temperature and its "light colour." The temperature of the object radiating the light is expressed in absolute temperature (K). This is also known as the colour temperature, which in turn stands for "light colour." As colour temperature increases, the light colour changes from red to yellow to white to blue.


Natural light colour temperature (K)
Colour change
Artificial light colour temperature (K)
White balance adjustment
Clear sky
Slightly overcast
Cloudy, rainy
Direct sunlight
2 hr.
1 hr.
40 min.
Time after sunrise/ before sunset
30 min.
20 min.
Sunrise/sunset
10,000(K)
10,000(K)
8,000
8,000
Blue
7,000
7,000
6,000
6,000
5,000
5,000
4,000
4,000
White
3,500
3,500
3,200
3,200
3,000
3,000
Yellow
2,500
2,500
Red
2,000
2,000
Fluorescent lamp (colour matching)
Fluorescent lamp (daylight white)
Fluorescent lamp (white)
Fluorescent lamp (off white)
Studio lamp
Halogen lamp
Tungsten lamp
Candle light
Outdoor mode
Auto white balance range
Indoor mode

U-3



Hints for Better Shooting

For More Effective Production

Scene length
— not too long, not too short

While there's no hard-and-fast rule, it is generally advisable to make each scene 6–7 seconds in length for easier viewing.
A succession of short scenes can tire the viewer, while long, single scenes can become boring.

Cutting according to the narration

Cut the scene when the narration is finished.

Cutting according to the subject U-3

- Make long shots longer **[a]**
  ...and close-ups shorter **[b]**.
  Because long shots have more to see in them than colse-ups, show them longer so the viewer may understand what's there.
- Make interesting shots and shots in which the subject is constantly moving longer. **[c]**
- Make static shots shorter **[d]**

Shoot as if you were watching the playback. That is, it's helpful to occasionally imagine your commentary of the scene even as you're shooting it!

In video, organization is the key

To make a first-class production, it is important to decide the contents and shooting sequence in advance. The first step is to sketch out a simple outline of the actual production based on the time-tested "five W's of journalism" (who, what, where, when, why, how). This will allow you to efficiently and effectively record the many exciting events that happen around you, such as sports matches, graduations, birthday parties, picnics, camping trips, and other special events.

When the tape is edited after recording
Shoot the scene a little longer to make the editing easier.

When the tape is not edited after recording
First record a title and then use the START/STOP function to make a smooth recording.

Use of the Battery Pack

There are two kinds of batteries, non-rechargeable ones (primary batteries) such as manganese, alkaline or lithium batteries, and rechargeable ones (secondary batteries) such as nickel-cadmium or lead batteries.
The NP-77/55 battery pack used for this unit is a rechargeable type. When a rechargeable battery is used under proper conditions, the power capacity remains stable for a long period.

Battery Life

For every hour's worth of tape you shoot, plan to use 2 to 3 hour's worth of battery power.

The NP-77 provides approximately 80 minutes operation.
The NP-55 provides approximately 40 minutes operation.

The above battery life shows when the fully-charged battery is used for continuous recording in the normal temperature.
The following cases cause the battery to wear.

- In the recording pause mode (standby)
- When the auto focusing operates
- When the power zooming operates
- When the cassette is inserted or removed

Ambient temperature

If the battery pack is used in a cold environment, its operating time is shortened.

- A chemical change occurs inside the battery when generating electrical energy. When the ambient temperature is high, the chemical change is stronger and the battery life is extended.
- Manganese and alkaline batteries are affected more than nickel-cadmium batteries by ambient temperature.
  Therefore the EBP-55 battery case cannot be used in a cold environment.

Charging and Discharging

To use the battery pack for a long time, charge the battery pack fully and discharge it.

Charging

- The battery pack can be charged within a temperature range of 0°C to 40°C (32°F to 104°F). However, it is hard to charge the battery pack in a cold place. We recommend undertaking charging operations within a temperature range of 10°C to 30°C (50°F to 86°F).
- The battery pack was not charged at the factory. So before using the battery pack, please charge it.
- If the battery pack is charged fully but not used for a long time (about 1 year), it discharges. Please charge it again but in this case the battery life is shortened.
  After several charging and discharging operations, the battery life will recover its original status.
- The battery pack may be warm after use or after charging, but this is normal. This is due to the chemical change that has occured inside the battery.

Discharging

- After using the recorder, remove the cassette and set the POWER switch to CAMERA and slide up the STANDBY switch, and leave the recorder until the battery pack is fully discharged.
- If recharging is repeated before the battery is exhausted, the battery life will be shortened.
  If the battery life has been shortened due to this, charge and discharge it to recover the original battery capacity.
- We recommend using the battery pack until the ▭ indication blinks.

Use of the Battery Pack

Storage

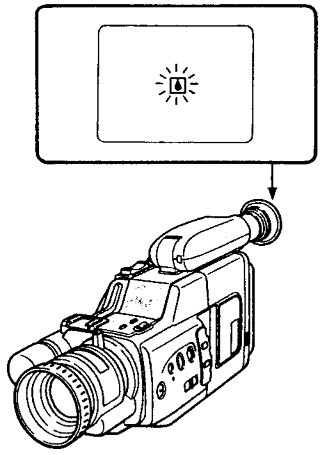
- When the video camera recorder is not in use, discharge the battery pack completely, remove and store it in a cold place. When the battery pack is installed, even if the power is turned off, a very small amount of electric current flows.
- Even when the battery pack is not in use, it discharges. This is called self-discharge.
  Self-discharge of the nickel-cadmium battery is more than that of the manganese or alkaline battery.
  The capacity decreases about 20% in one month and 30% in two months.
  After the battery is stored in a hot place, the capacity is lowered due to self-discharge.

Battery life

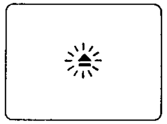
Th battery pack can be used about 500 times in normal temperatures, if it is charged fully and discharged and stored in a cold place when not in use.

The battery pack can be used until the capacity becomes less than 50% and cannot be recharged.
If the 🔋 indication blinks even when a fully charged battery is used, use a new battery pack.

V-1



V-2



General

Notes on Moisture Condensation

If the unit is brought directly from a cold to a warm location, moisture may condense inside the unit, on the surface or the tape or on the lens. In this condition, the tape may adhere to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the unit is furnished with moisture sensors.

Moisture is present inside the unit when: V-1

- The ▣ indicator blinks inside the viewfinder.

No function except for cassette ejection will work.

⬇

Eject the cassette if present, and turn off the unit and leave it with the cassette holder open at least for one hour.

⬇

The unit can be used again if the ▣ indicator does not appear when the power is turned on again.

If moisture is present on the surface of the tape V-2

When the tape is inserted and a tape transport button is pressed, the ⏏ indicator blinks inside the viewfinder. No function except for cassette ejection willl work.

⬇

Eject the cassette and let the unit and the cassette sit at least for one hour.
The cassette can be used again if the ⏏ indicator does not appear when the cassette is inserted and a tape transport button is pressed.

If moisture condensation occurs on the lens
There are no caution indicators, but the lens becomes dim. Turn off the power and leave the unit unused at least for one hour.

Precautions

Operation

- Operate the unit on 6.0/7.5/9.0 V DC (battery pack/AC power adaptor/EBP-55).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Do not hold the unit by the viewfinder.
- Avoid rough handling or mechanical shock to the unit. Be particularly careful of the lens.
- Do not apply excessive force to the microphone.
- Avoid shooting the same object for a long period of time (for example, using as a lookout camera or pointing the camera directly at the sun or other bright light sources) as this will damage the colour filter inside the camera and may cause a poor picture quality.
- Remove and store video cassettes after recording or playback.
- Do not wrap up the unit and operate it because heat may build up internally.
- Avoid using and storing the recorder in the following locations.
  —Locations susceptible to vibration.
  —Locations exposed to strong magnetic fields.
  —Locations near TV or radio transmitters where strong radio waves are generated.
- Do not put the unit on the sand.

Care

- Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.
- When the unit will not be used for a long period of time, periodically turn on the power, operate the camera section and recorder section and play back a tape for about three minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on them, remove them with a soft cloth. Clean the recorder body with a dry, soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish. For protection, keep the lens cap on the lens when not using the camera.

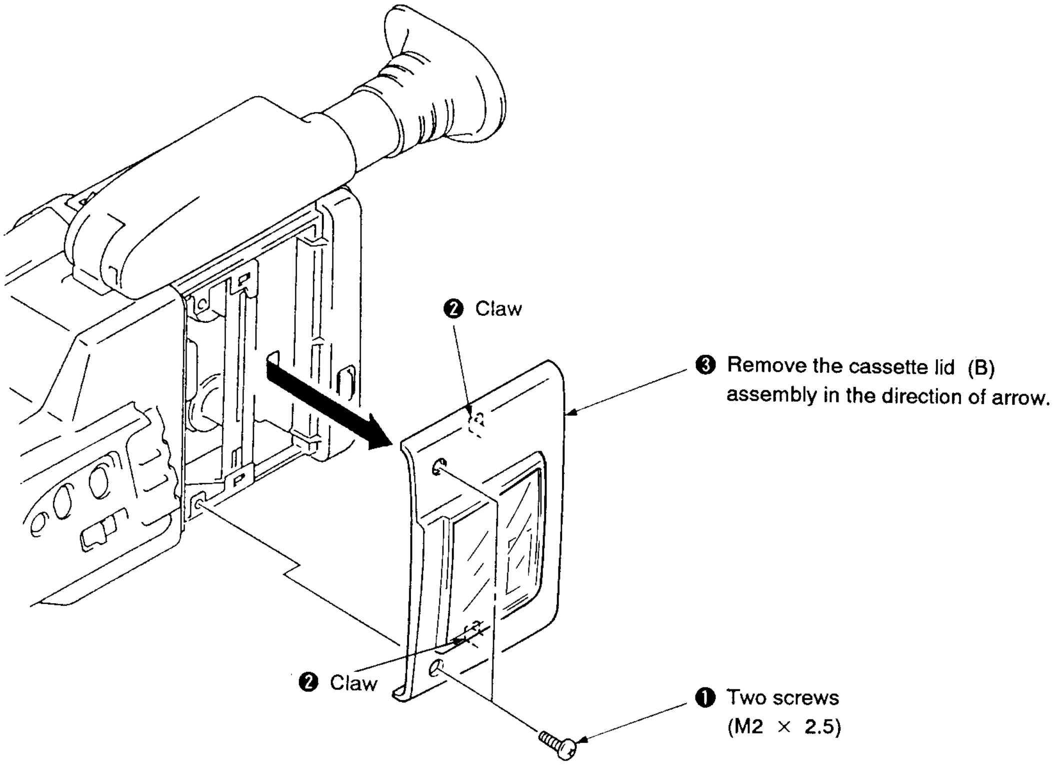
Trouble Indicators

○ when the indicator appears ▭ slow blinking ▭ fast blinking

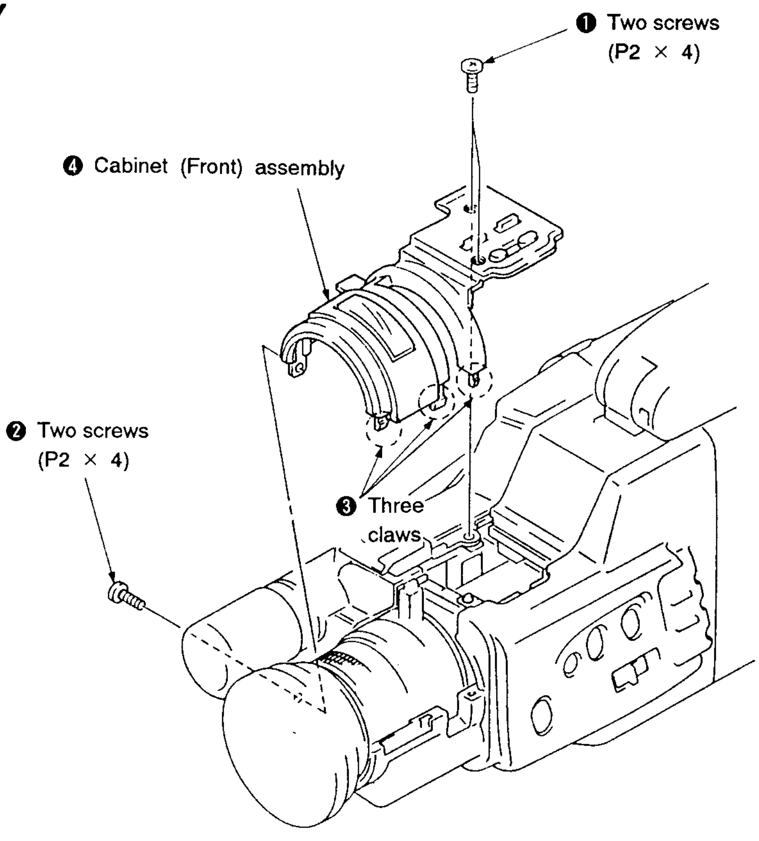
	Position of the POWER switch		Indicator	
Cause	PLAYER	CAMERA	Indicator to be shown inside the viewfinder	Camera recording/ battery lamp
The battery is fully exhausted.	○	○	🔋	
The battery is weak.	○	○	🔋	
The tape is at its end.		○	📼 ⏏	
No cassette is inserted.		○	📼	
The tab on the cassette is out.		○	📼 ⏏	
Moisture has condensed inside the unit.	○	○	💧 ⏏	
The gap of the head is clogged.	○	○	⊗	
Other troubles	○	○	⏏	
The lithium battery is fully exhausted		○	0:00:00 (5 seconds) ⬇ 1. 1. 1988 0:00:00	
The lithium battery is weak		○	Time (5 seconds) ⬇ Normal indication for the operation	

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CASSETTE LID (B) ASSEMBLY

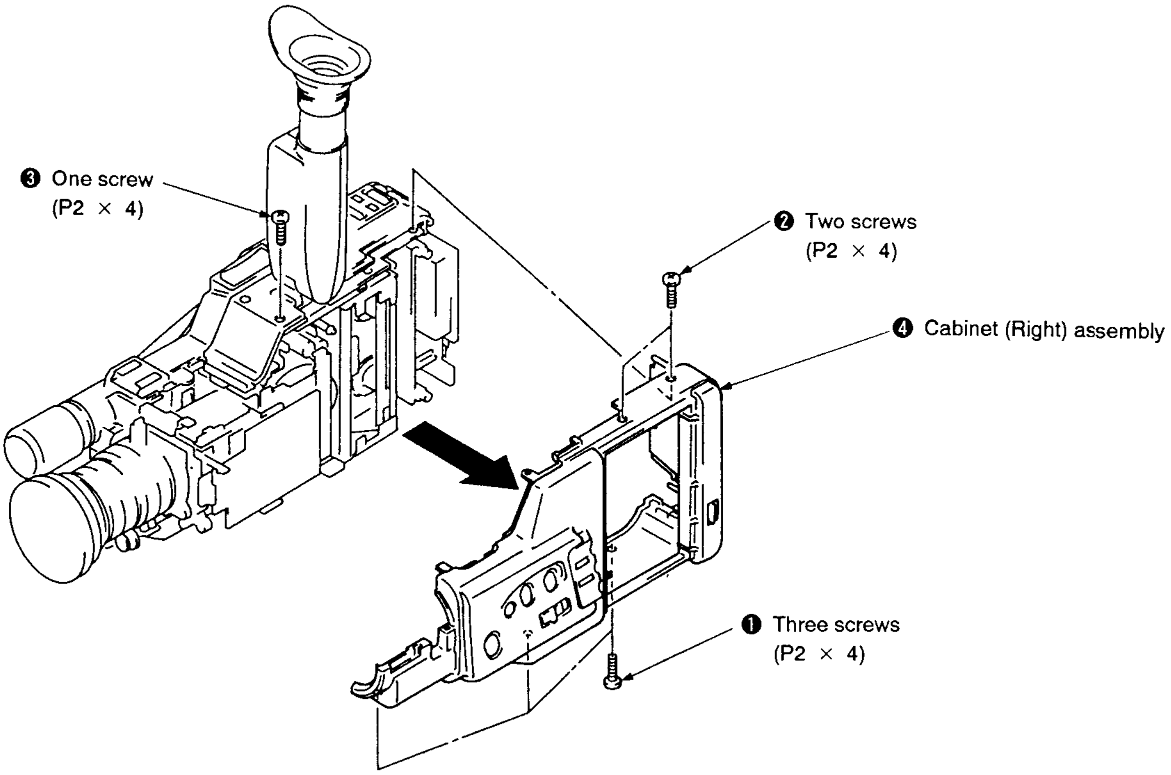

❷ Claw
❸ Remove the cassette lid (B) assembly in the direction of arrow.
❷ Claw
❶ Two screws (M2 × 2.5)

2-2. REMOVAL OF CABINET (FRONT) ASSEMBLY

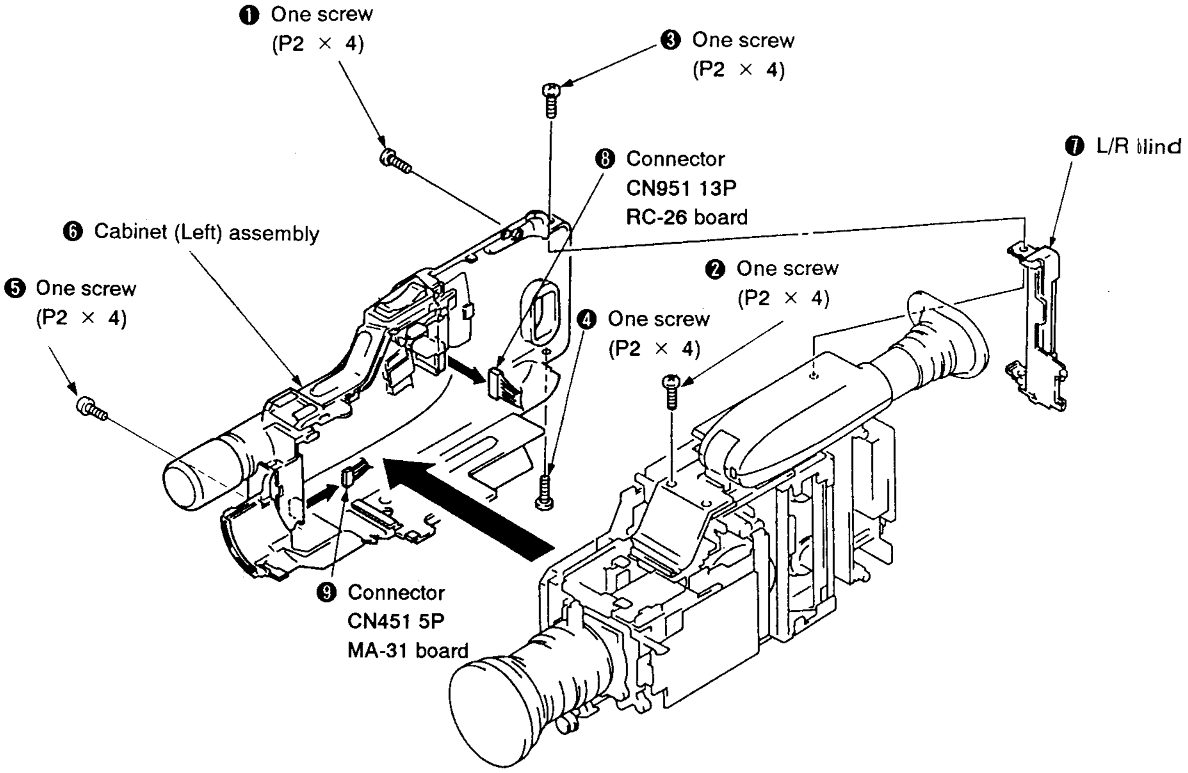

❶ Two screws (P2 × 4)
❹ Cabinet (Front) assembly
❷ Two screws (P2 × 4)
❸ Three claws

2-3. REMOVAL OF CABINET (RIGHT) ASSEMBLY

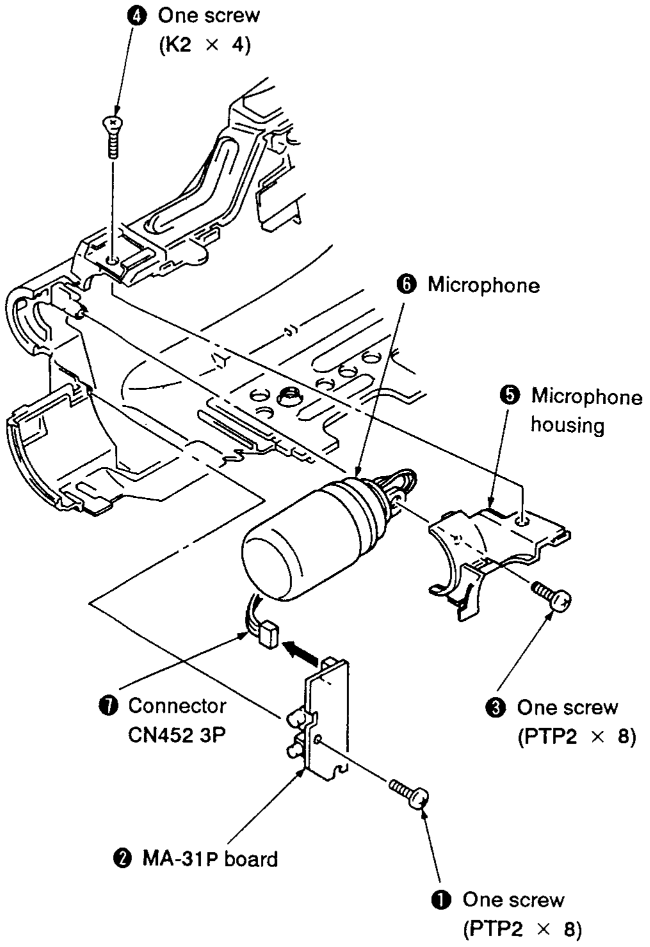
Note: Perform this servicing with EVF raise as the figure below.


❸ One screw
(P2 × 4)
❷ Two screws
(P2 × 4)
❹ Cabinet (Right) assembly
❶ Three screws
(P2 × 4)

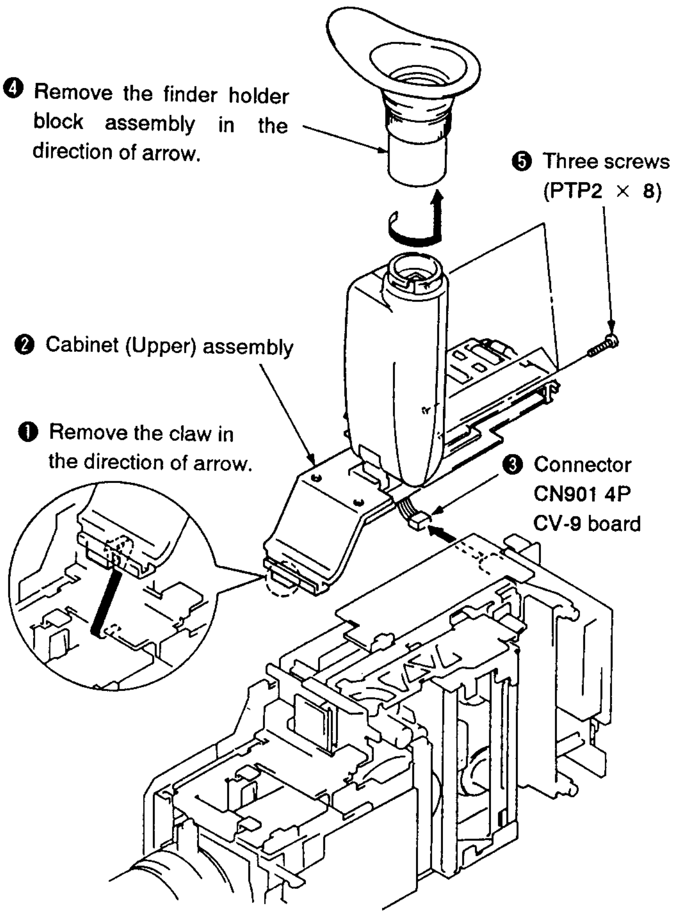
2-4. REMOVAL OF CABINET (LEFT) ASSEMBLY


❶ One screw
(P2 × 4)
❸ One screw
(P2 × 4)
❽ Connector
CN951 13P
RC-26 board
❼ L/R blind
❻ Cabinet (Left) assembly
❷ One screw
(P2 × 4)
❺ One screw
(P2 × 4)
❹ One screw
(P2 × 4)
❾ Connector
CN451 5P
MA-31 board

2-5. REMOVAL OF MICROPHONE


❹ One screw
(K2 × 4)
❻ Microphone
❺ Microphone
housing
❼ Connector
CN452 3P
❸ One screw
(PTP2 × 8)
❷ MA-31P board
❶ One screw
(PTP2 × 8)

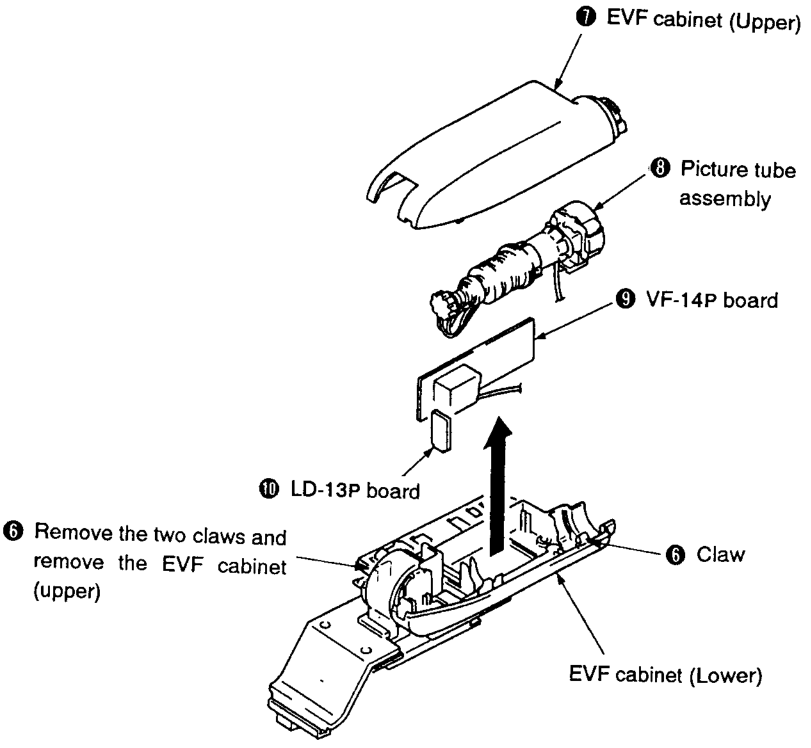
2-6. REMOVAL OF CABINET (UPPER) ASSEMBLY AND EVF


❹ Remove the finder holder block assembly in the direction of arrow.

❺ Three screws
(PTP2 × 8)
❷ Cabinet (Upper) assembly

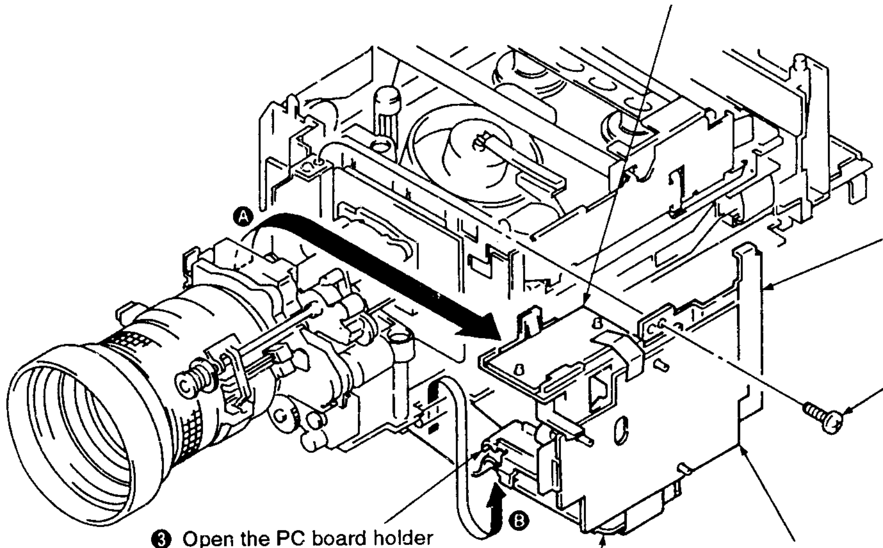
❶ Remove the claw in the direction of arrow.

❸ Connector
CN901 4P
CV-9 board


❼ EVF cabinet (Upper)
❽ Picture tube
assembly
❾ VF-14P board
❿ LD-13P board
❻ Claw
EVF cabinet (Lower)

❻ Remove the two claws and remove the EVF cabinet (upper)

2-7. OPENING THE CK/LI ASSEMBLY

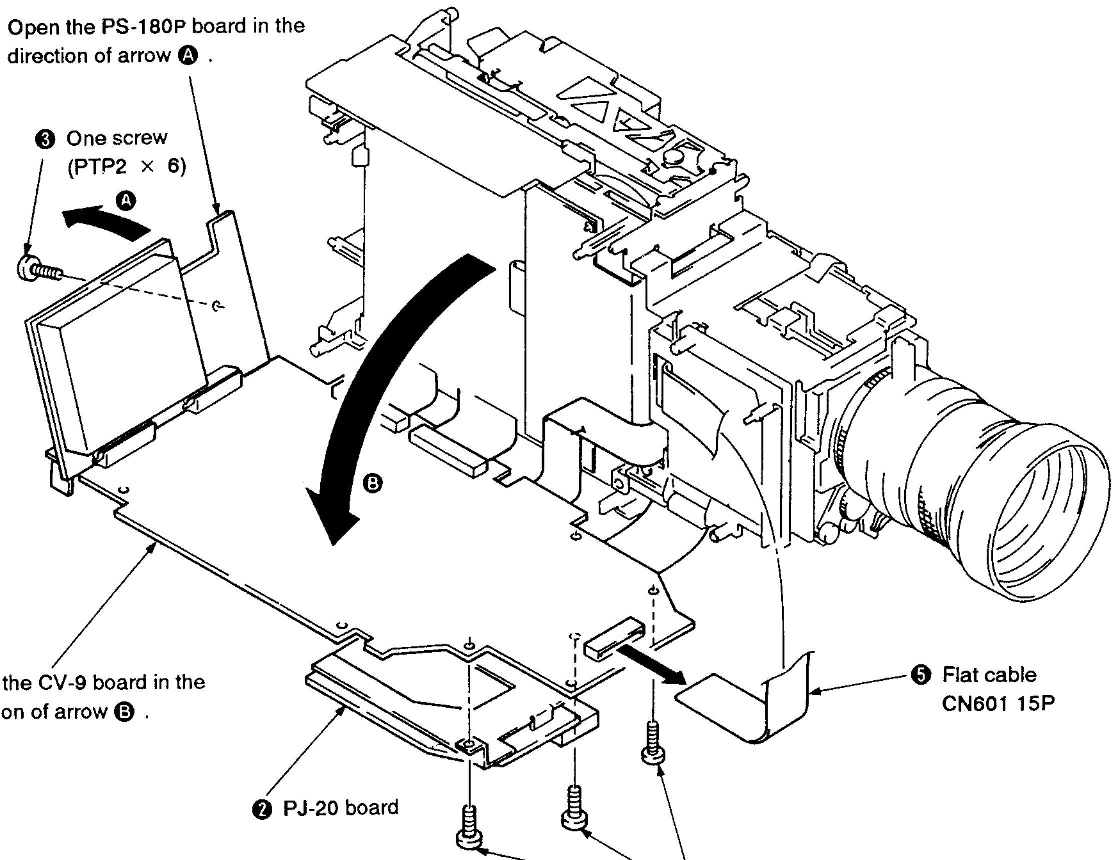

DK-2P board
Ⓐ
Ⓑ
CK-8P board
LI-10 board

❶ One screw
(P2 × 4)

❷ Open the CK/LI assembly in the direction of arrow Ⓐ .

❸ Open the PC board holder in the direction of arrow Ⓑ .

2-8. OPENING THE PS-180P, CV-9 AND PJ-20 BOARDS


Ⓐ
Ⓑ
PJ-20 board
Flat cable
CN601 15P

❶ Three screws
(P2 × 4)

❷ PJ-20 board

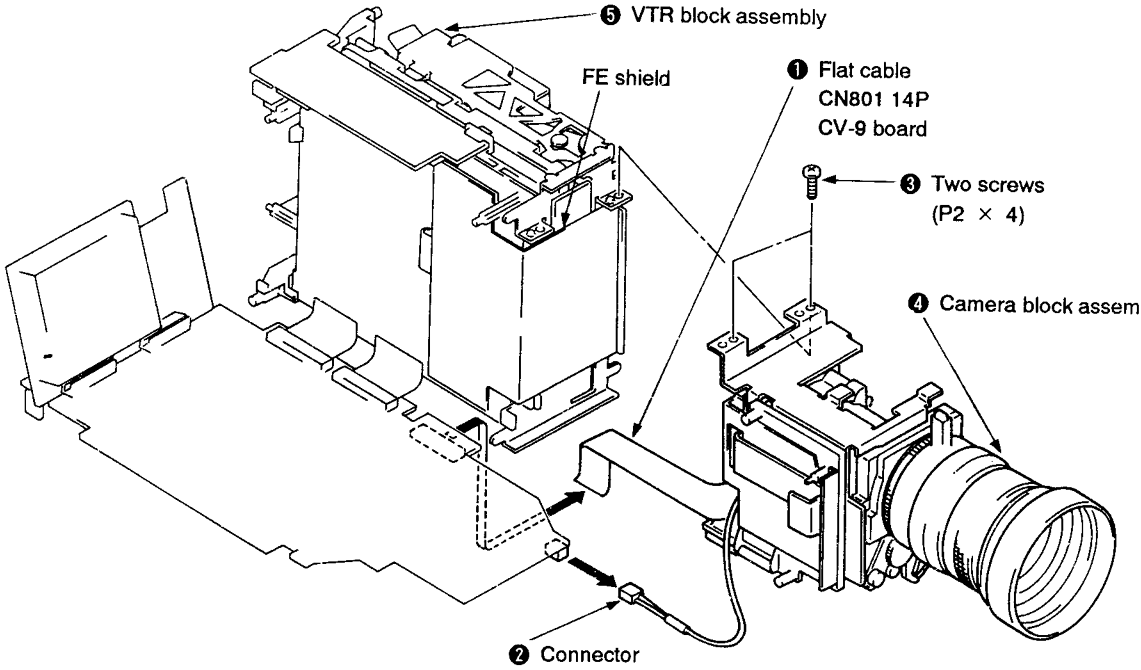
❸ One screw
(PTP2 × 6)

❹ Open the PS-180P board in the direction of arrow Ⓐ .

❺ Flat cable
CN601 15P

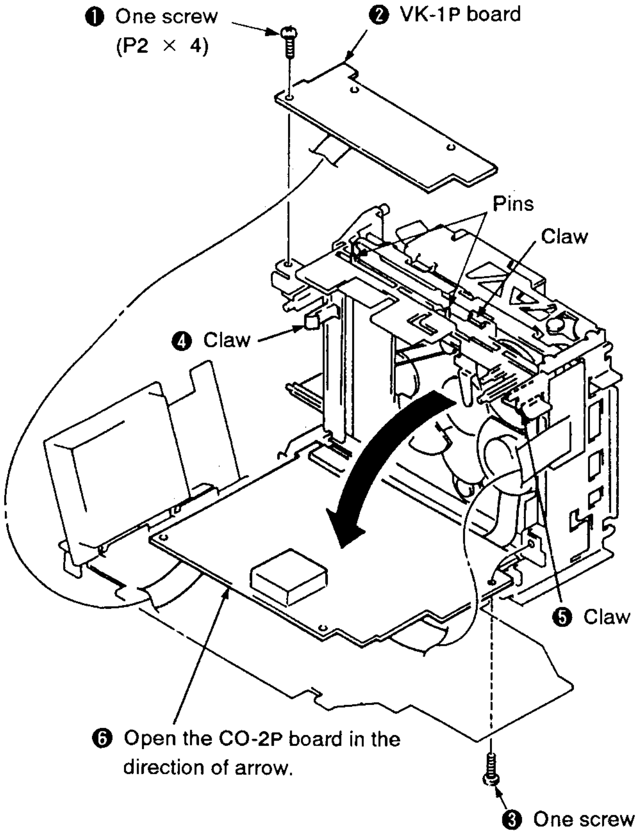
❻ Open the CV-9 board in the direction of arrow Ⓑ .

2-9. SEPARATING THE CAMERA AND VTR BLOCKS

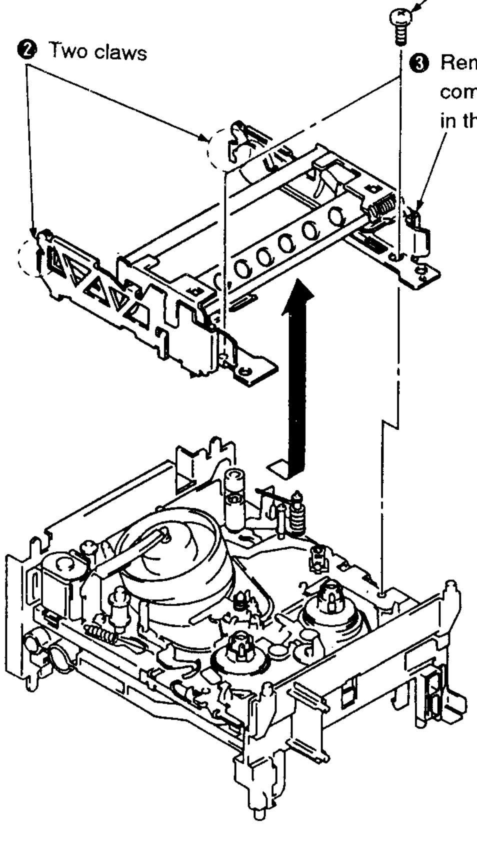

❺ VTR block assembly
FE shield
❶ Flat cable
CN801 14P
CV-9 board
❸ Two screws
(P2 × 4)
❹ Camera block assembly
❷ Connector
CN602 2P
CV-9 board

2-10. OPENING THE CO-2P AND VK-1P BOARDS

Notes:
1) Pay attention to two pins and a claw when removing the VK-1P board.
2) Care for the FE shield which is adhered to the RP amplifier shield case with a double coated tape.

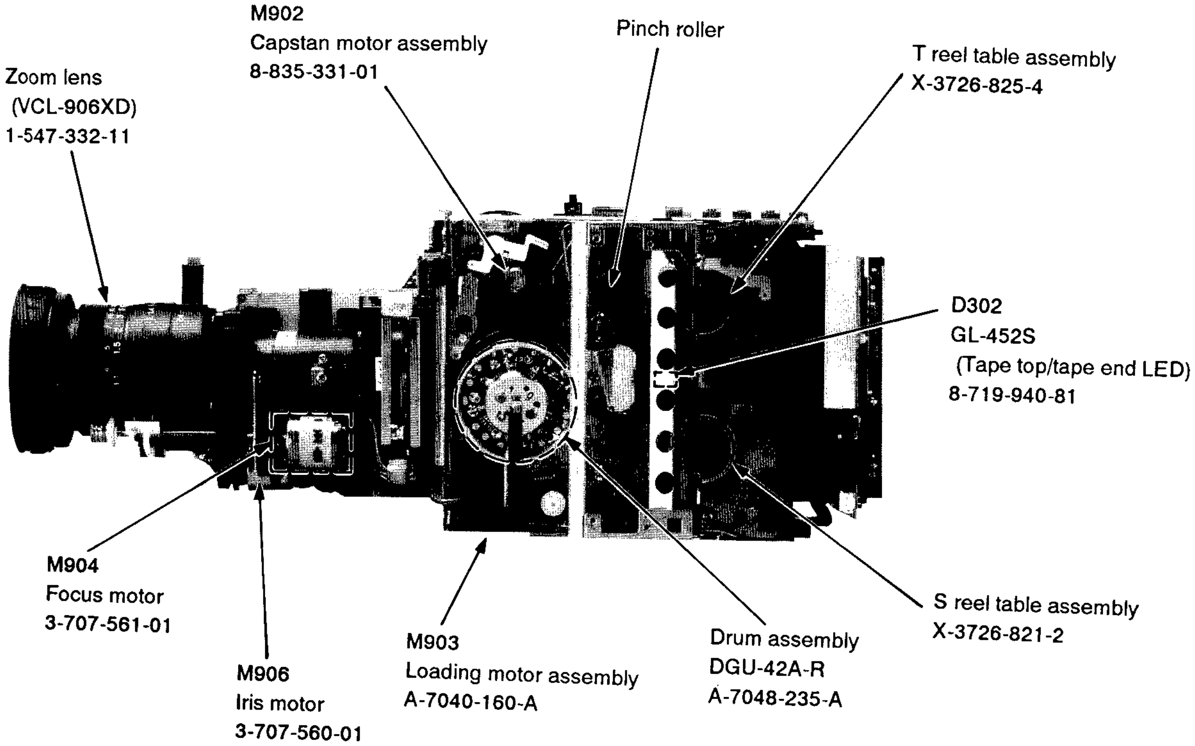

❶ One screw
(P2 × 4)
❷ VK-1P board
Pins
Claw
❹ Claw
❺ Claw
❻ Open the CO-2P board in the direction of arrow.
❸ One screw
(P2 × 4)

2-11. REMOVAL OF CASSETTE COMPARTMENT ASSEMBLY

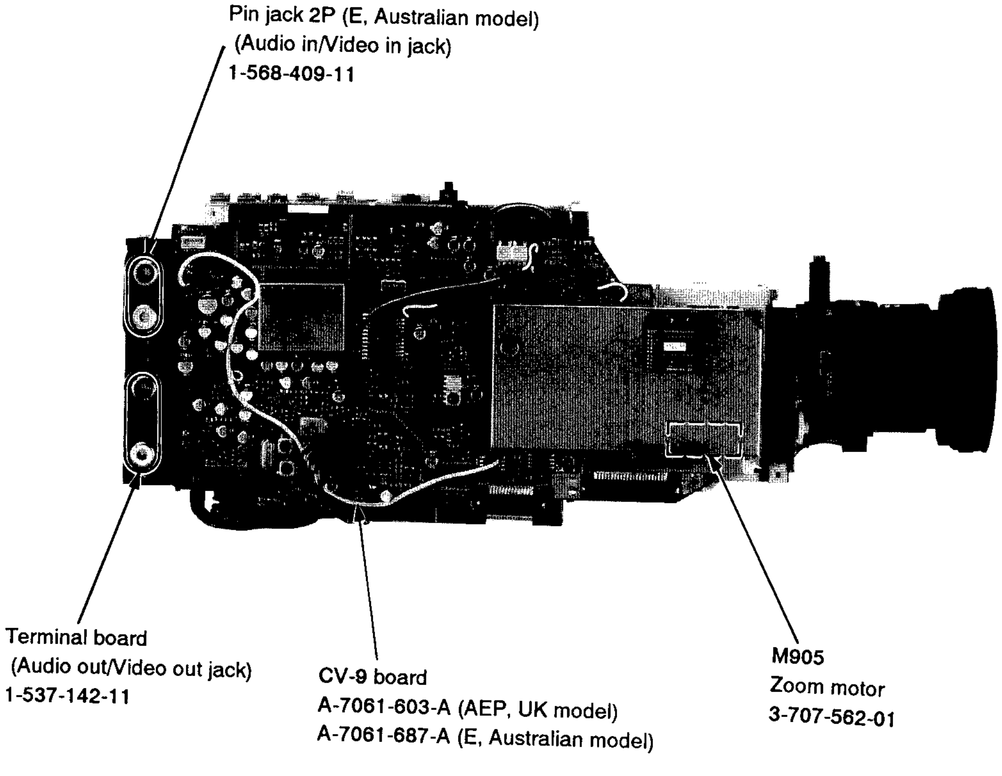

❶ Two screws
(P2 × 3)
❷ Two claws
❸ Remove the cassette compartment assembly in the direction of arrow.

2-12. INTERNAL VIEW

– Right Side –

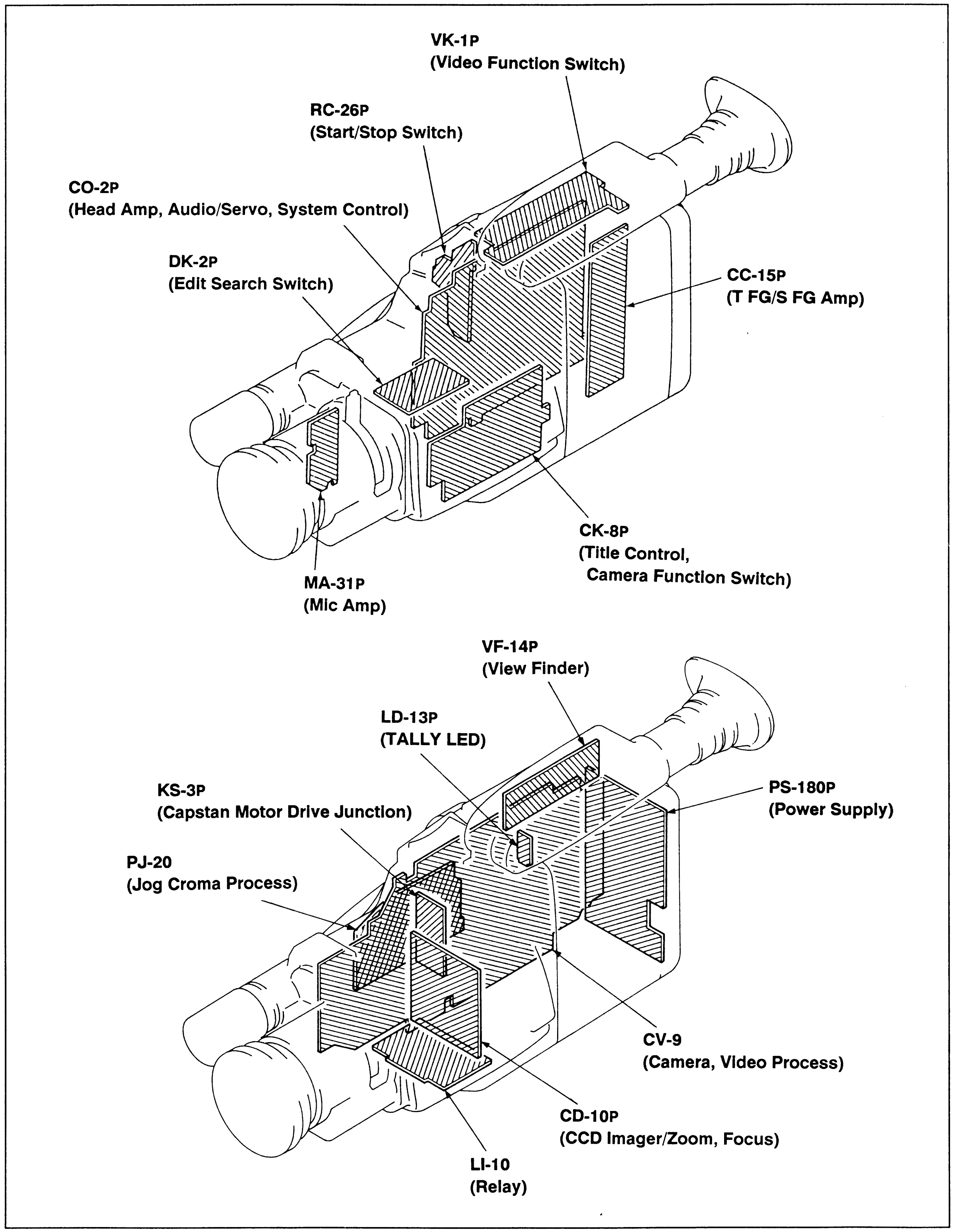

Zoom lens
(VCL-906XD)
1-547-332-11
M902
Capstan motor assembly
8-835-331-01
Pinch roller
T reel table assembly
X-3726-825-4
D302
GL-452S
(Tape top/tape end LED)
8-719-940-81
M904
Focus motor
3-707-561-01
M906
Iris motor
3-707-560-01
M903
Loading motor assembly
A-7040-160-A
Drum assembly
DGU-42A-R
A-7048-235-A
S reel table assembly
X-3726-821-2

– Left Side –

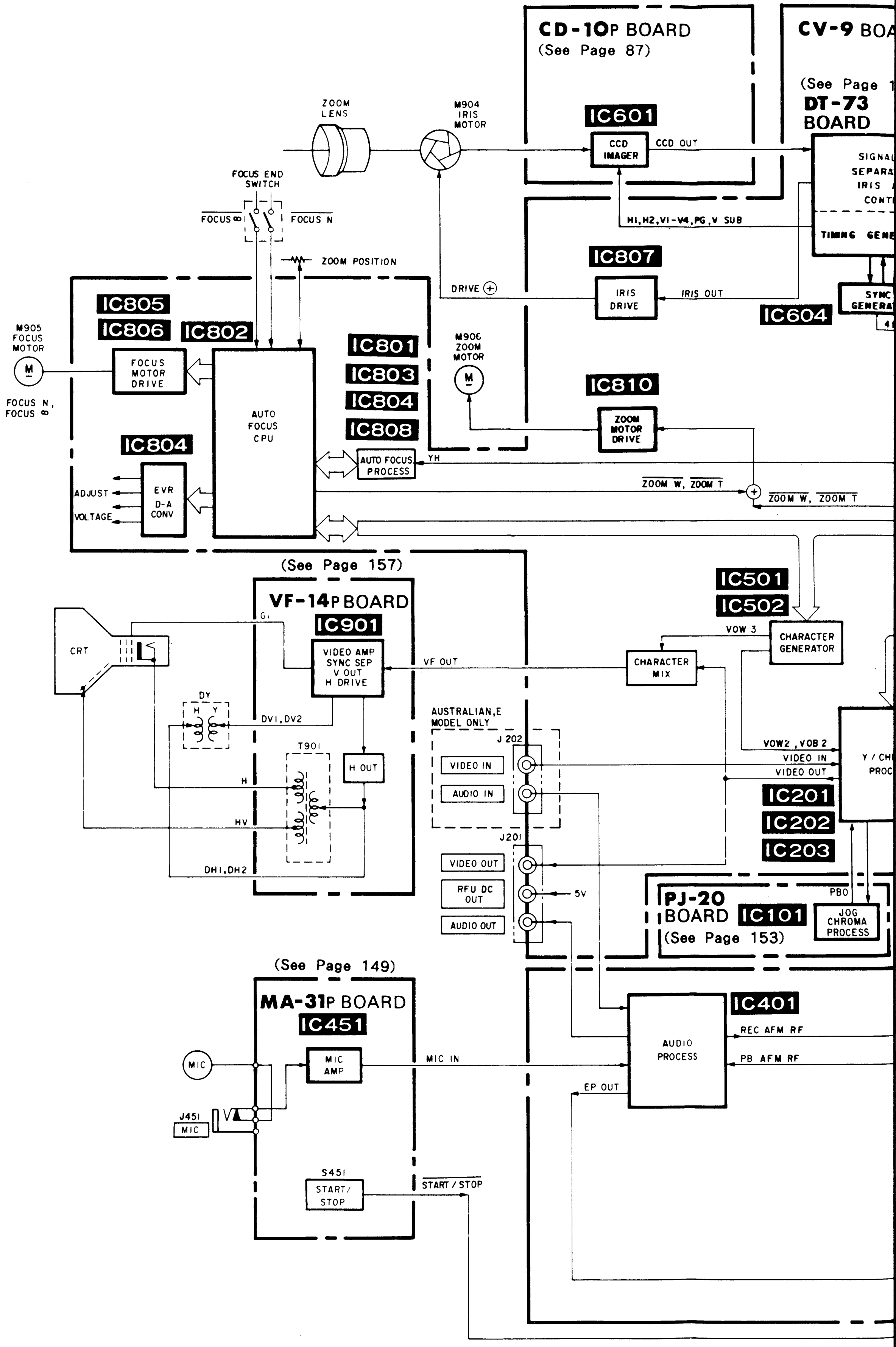

Pin jack 2P (E, Australian model)
(Audio in/Video in jack)
1-568-409-11
Terminal board
(Audio out/Video out jack)
1-537-142-11
CV-9 board
A-7061-603-A (AEP, UK model)
A-7061-687-A (E, Australian model)
M905
Zoom motor
3-707-562-01

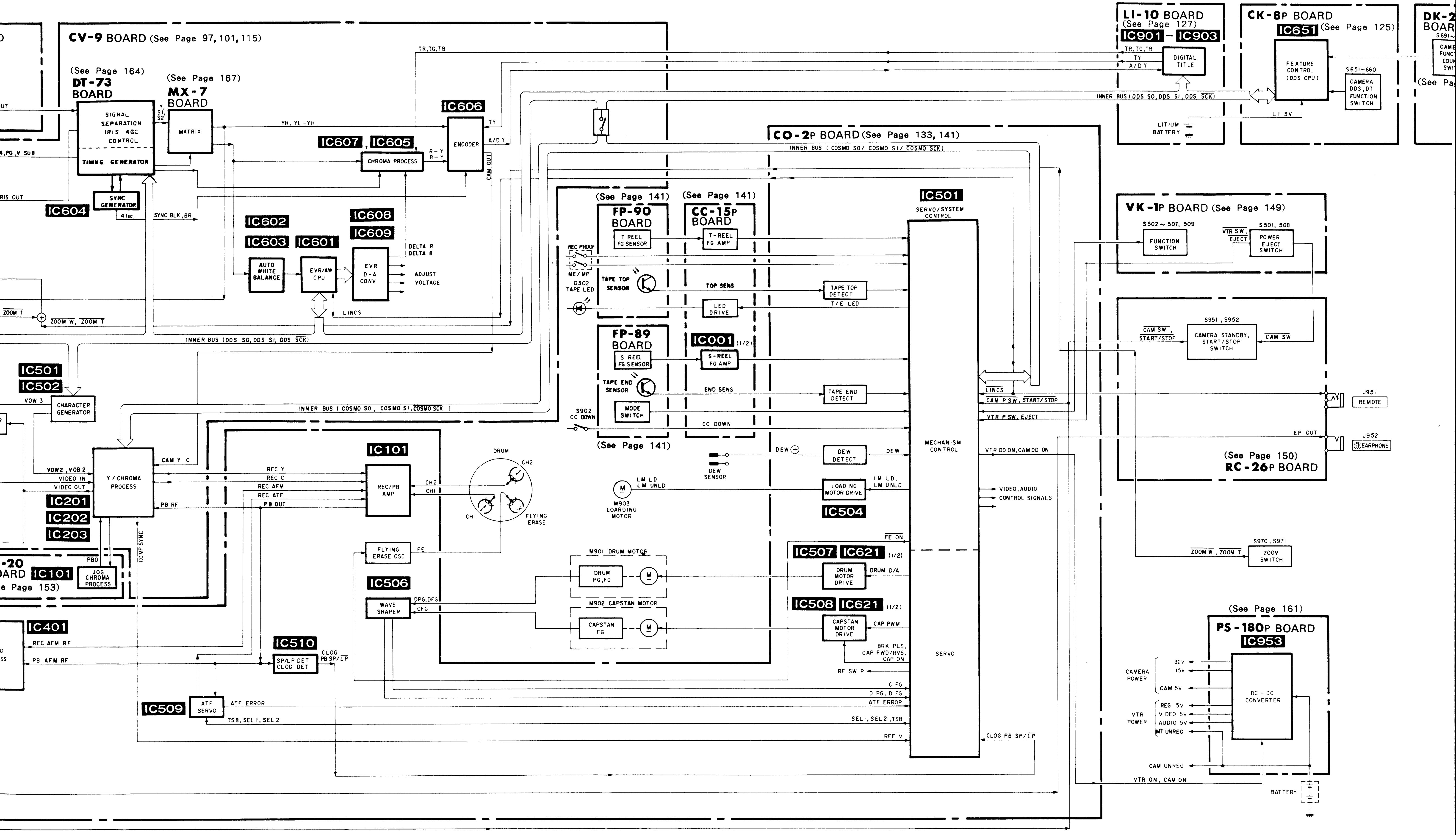
SECTION 3
DIAGRAMS

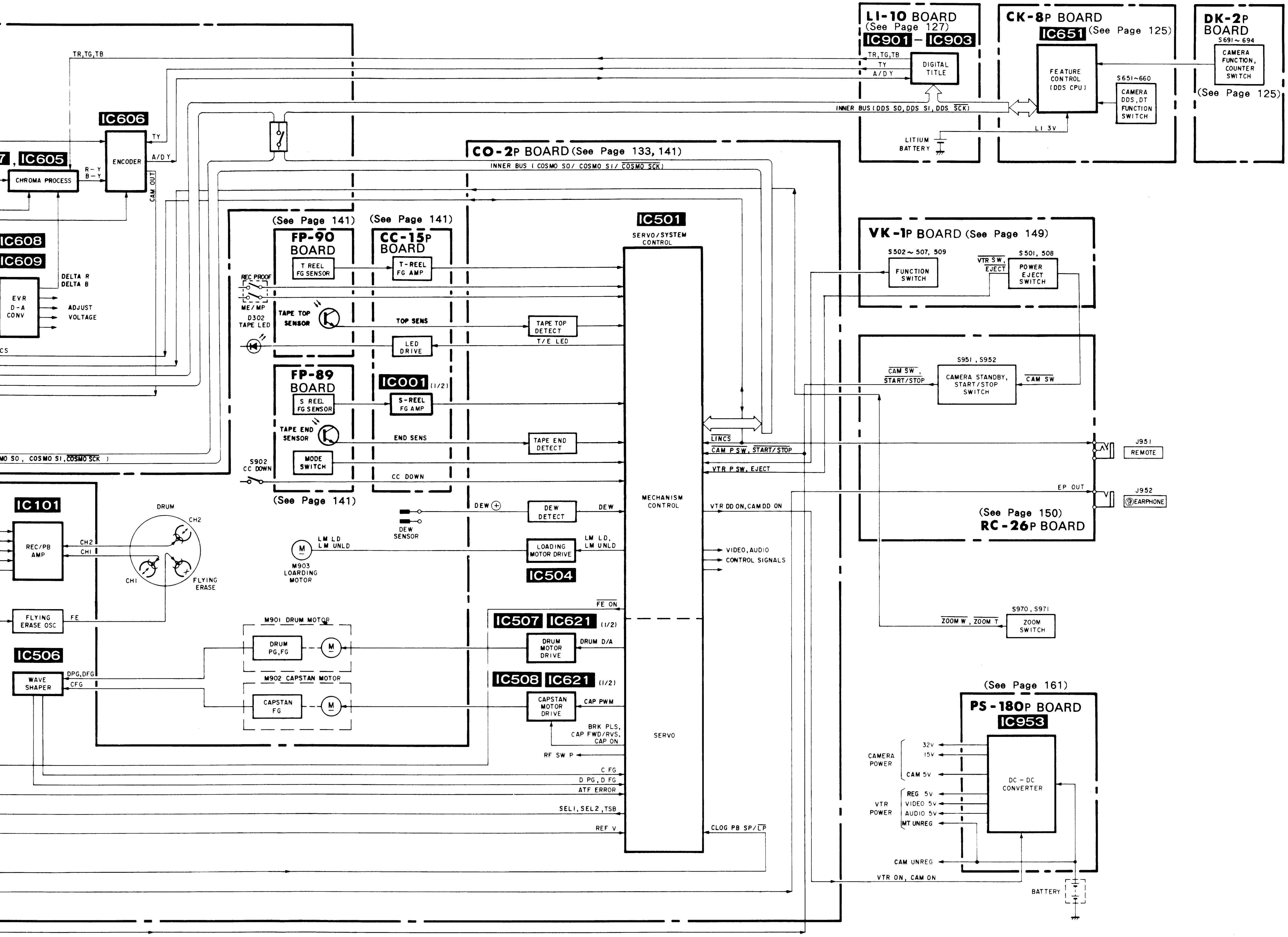
3-1. CIRCUIT BOARDS LOCATION


VK-1P
(Video Function Switch)
RC-26P
(Start/Stop Switch)
CO-2P
(Head Amp, Audio/Servo, System Control)
DK-2P
(Edit Search Switch)
CC-15P
(T FG/S FG Amp)
CK-8P
(Title Control,
Camera Function Switch)
MA-31P
(Mic Amp)
VF-14P
(View Finder)
LD-13P
(TALLY LED)
KS-3P
(Capstan Motor Drive Junction)
PS-180P
(Power Supply)
PJ-20
(Jog Croma Process)
CV-9
(Camera, Video Process)
CD-10P
(CCD Imager/Zoom, Focus)
LI-10
(Relay)

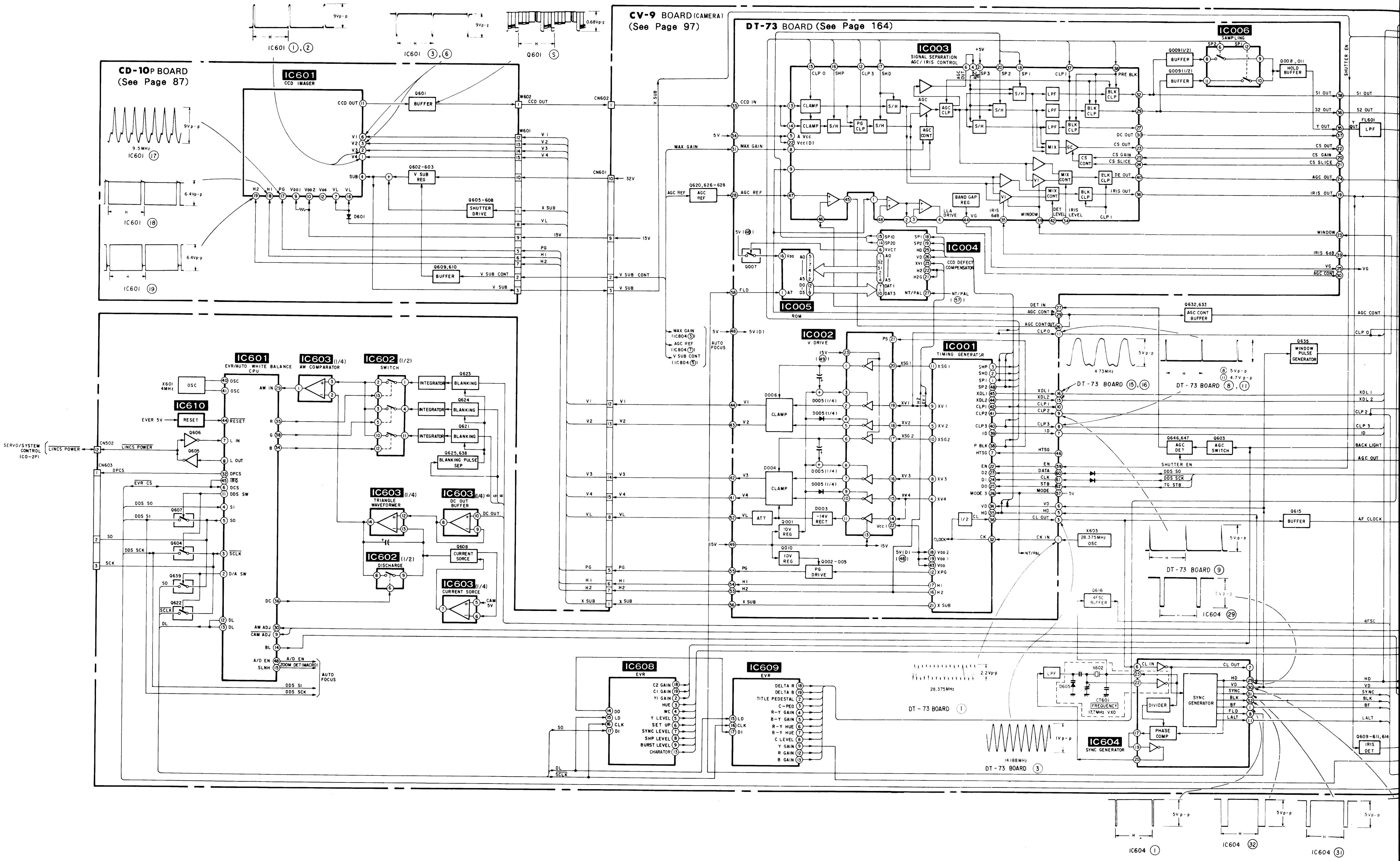
3-2. OVERALL BLOCK DIAGRAM

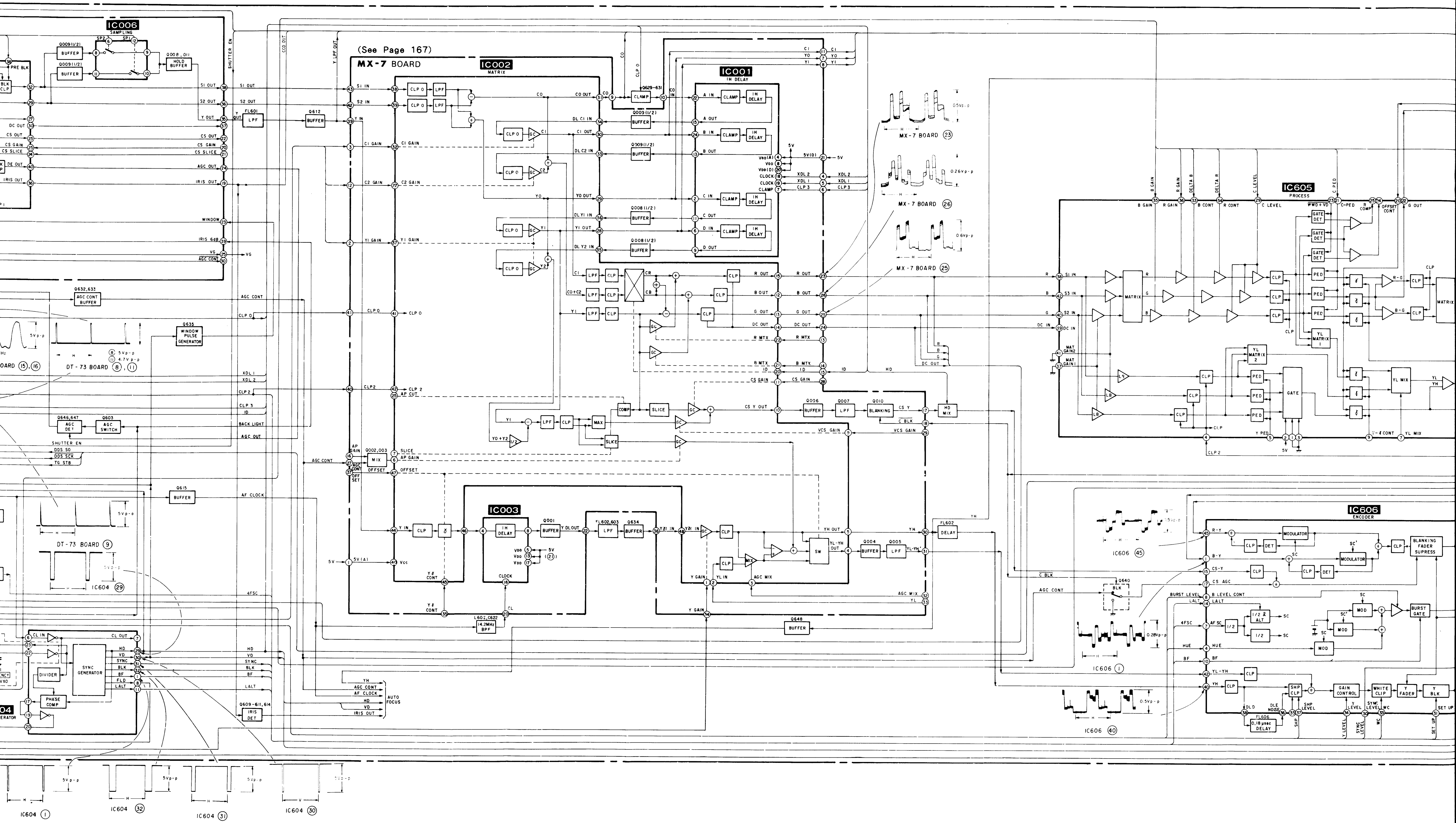

CD-10P BOARD
(See Page 87)
CV-9 BOA
(See Page 1
DT-73
BOARD
ZOOM LENS
M904 IRIS MOTOR
IC601
CCD IMAGER
CCD OUT
SIGNAL SEPARA IRIS CONT
TIMING GENE
H1,H2,V1-V4,PG,V SUB
FOCUS END SWITCH
FOCUS ∞
FOCUS N
ZOOM POSITION
IC807
IRIS DRIVE
IRIS OUT
DRIVE ⊕
IC604
SYNC GENERA
IC805
IC806
IC802
M905 FOCUS MOTOR
FOCUS MOTOR DRIVE
FOCUS N, FOCUS ∞
IC801
IC803
IC804
IC808
M906 ZOOM MOTOR
IC810
ZOOM MOTOR DRIVE
AUTO FOCUS CPU
IC804
EVR D-A CONV
ADJUST
VOLTAGE
AUTO FOCUS PROCESS
YH
ZOOM W, ZOOM T
ZOOM W, ZOOM T
(See Page 157)
VF-14P BOARD
IC901
CRT
G1
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
DY
H V
DV1, DV2
T901
H OUT
H
HV
DH1, DH2
IC501
IC502
VOW 3
CHARACTER GENERATOR
CHARACTER MIX
AUSTRALIAN,E MODEL ONLY
J202
VIDEO IN
AUDIO IN
VOW2, VOB 2
VIDEO IN
VIDEO OUT
Y/CH PROC
IC201
IC202
IC203
J201
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
PJ-20 BOARD
IC101
(See Page 153)
PBO
JOG CHROMA PROCESS
(See Page 149)
MA-31P BOARD
IC451
MIC
MIC AMP
MIC IN
J451 MIC
IC401
AUDIO PROCESS
REC AFM RF
PB AFM RF
EP OUT
S451
START/STOP
START / STOP

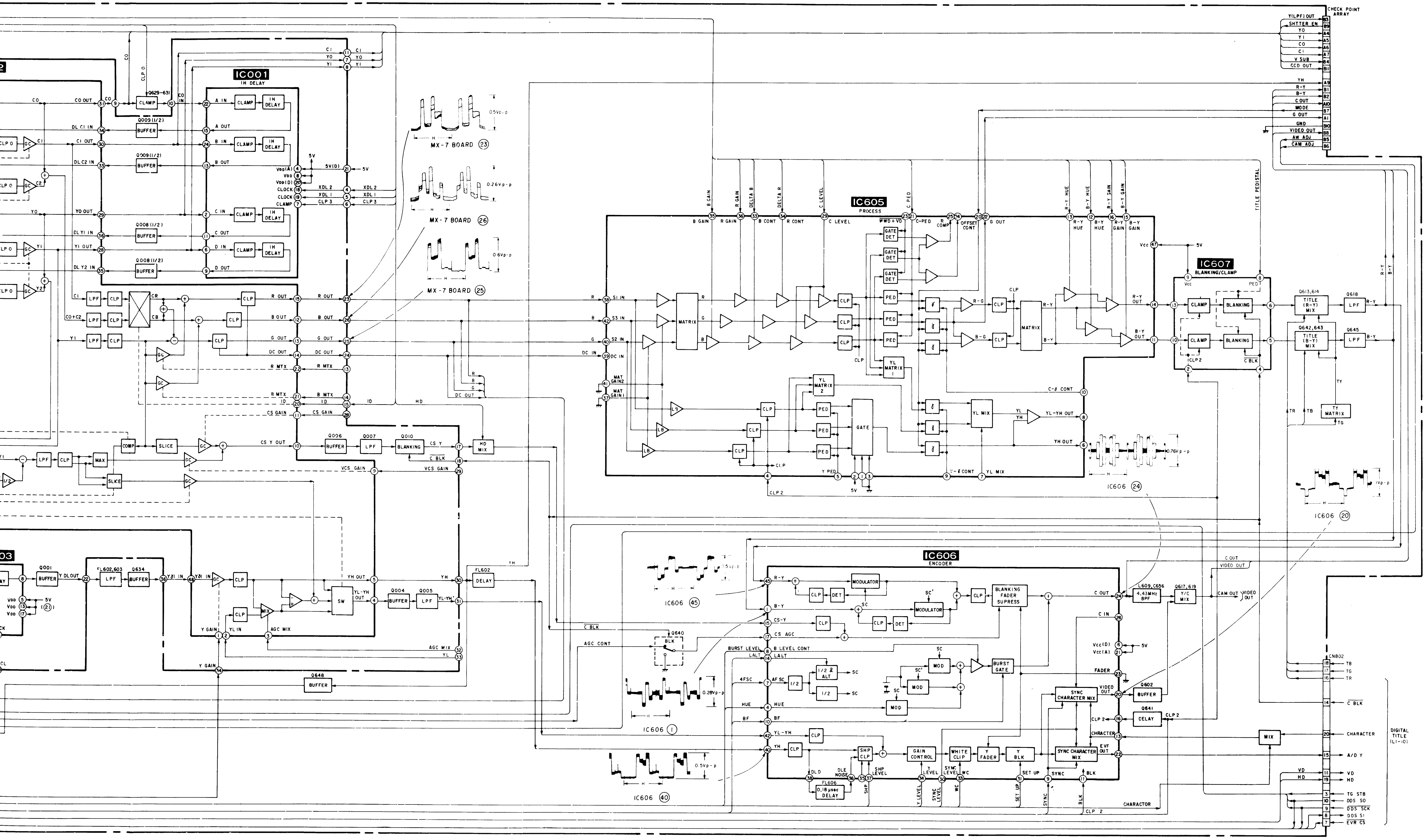

CV-9 BOARD (See Page 97, 101, 115)
(See Page 164)
DT-73 BOARD
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
SYNC GENERATOR
IC604
4fsc
SYNC BLK, BR
(See Page 167)
MX-7 BOARD
MATRIX
Y, S1, S2
YH, YL-YH
IC607, IC605
CHROMA PROCESS
R-Y
B-Y
IC606
ENCODER
TY
A/DY
CAM OUT
TR, TG, TB
IC602
IC603
IC601
IC608
IC609
AUTO WHITE BALANCE
EVR/AW CPU
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
LINCS
ZOOM T
ZOOM W, ZOOM T
INNER BUS (DDS SO, DDS SI, DDS SCK)
IC501
IC502
VOW 3
CHARACTER GENERATOR
INNER BUS (COSMO SO, COSMO SI, COSMO SCK)
VOW2, VOB2
VIDEO IN
VIDEO OUT
Y/CHROMA PROCESS
CAM Y C
REC Y
REC C
REC AFM
REC ATF
PB OUT
PB RF
IC201
IC202
IC203
COMP SYNC
-20 BOARD
IC101
JOG CHROMA PROCESS
PBO
(See Page 153)
IC101
REC/PB AMP
CH2
CH1
DRUM
FLYING ERASE
FLYING ERASE OSC
FE
IC506
WAVE SHAPER
DPG, DFG
CFG
IC401
REC AFM RF
PB AFM RF
IC510
SP/LP DET CLOG DET
CLOG
PB SP/LP
IC509
ATF SERVO
ATF ERROR
TSB, SEL1, SEL2
LI-10 BOARD (See Page 127)
IC901 - IC903
TR, TG, TB
TY
A/DY
DIGITAL TITLE
LITIUM BATTERY
INNER BUS (DDS SO, DDS SI, DDS SCK)
CK-8P BOARD
IC651 (See Page 125)
FEATURE CONTROL (DDS CPU)
S651~660
CAMERA DDS, DT FUNCTION SWITCH
LI 3V
DK-2 BOARD
S691~
CAME FUNCT COUN SWIT
(See Pa
CO-2P BOARD (See Page 133, 141)
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
(See Page 141)
FP-90 BOARD
T REEL FG SENSOR
(See Page 141)
CC-15P BOARD
T-REEL FG AMP
REC PROOF
ME/MP
TAPE TOP SENSOR
D302 TAPE LED
TOP SENS
TAPE TOP DETECT
T/E LED
LED DRIVE
FP-89 BOARD
S REEL FG SENSOR
IC001 (1/2)
S-REEL FG AMP
TAPE END SENSOR
END SENS
TAPE END DETECT
S902 CC DOWN
MODE SWITCH
CC DOWN
(See Page 141)
IC501
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
SERVO
DEW
DEW SENSOR
DEW DETECT
M903 LOADING MOTOR
LM LD
LM UNLD
LOADING MOTOR DRIVE
IC504
VIDEO, AUDIO
CONTROL SIGNALS
FE ON
IC507 IC621 (1/2)
M901 DRUM MOTOR
DRUM PG, FG
DRUM MOTOR DRIVE
DRUM D/A
IC508 IC621 (1/2)
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2, TSB
REF V
CLOG PB SP/LP
LINCS
CAM P SW, START/STOP
VTR P SW, EJECT
VTR DD ON, CAM DD ON
VK-1P BOARD (See Page 149)
S502~507, 509
FUNCTION SWITCH
S501, 508
VTR SW, EJECT
POWER EJECT SWITCH
S951, S952
CAM SW, START/STOP
CAMERA STANDBY, START/STOP SWITCH
CAM SW
J951
REMOTE
EP OUT
J952
EARPHONE
(See Page 150)
RC-26P BOARD
S970, S971
ZOOM W, ZOOM T
ZOOM SWITCH
(See Page 161)
PS-180P BOARD
IC953
DC-DC CONVERTER
CAMERA POWER
32V
15V
CAM 5V
VTR POWER
REG 5V
VIDEO 5V
AUDIO 5V
MT UNREG
CAM UNREG
VTR ON, CAM ON
BATTERY


LI-10 BOARD
(See Page 127)
IC901 - IC903
TR,TG,TB
TY
A/DY
DIGITAL TITLE
INNER BUS (DDS SO, DDS SI, DDS SCK)
LITIUM BATTERY
CK-8P BOARD
IC651 (See Page 125)
FEATURE CONTROL (DDS CPU)
S651~660
CAMERA DDS,DT FUNCTION SWITCH
LI 3V
DK-2P BOARD
S691~694
CAMERA FUNCTION, COUNTER SWITCH
(See Page 125)
IC606
ENCODER
TY
A/DY
CAM OUT
IC605
CHROMA PROCESS
R-Y
B-Y
IC608
IC609
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
CS
MO SO, COSMO SI, COSMO SCK
CO-2P BOARD (See Page 133, 141)
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
(See Page 141)
FP-90 BOARD
T REEL FG SENSOR
(See Page 141)
CC-15P BOARD
T-REEL FG AMP
REC PROOF
ME/MP
TAPE TOP SENSOR
D302 TAPE LED
TOP SENS
TAPE TOP DETECT
T/E LED
LED DRIVE
FP-89 BOARD
IC001 (1/2)
S REEL FG SENSOR
S-REEL FG AMP
TAPE END SENSOR
END SENS
TAPE END DETECT
MODE SWITCH
S902 CC DOWN
CC DOWN
(See Page 141)
IC501
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
SERVO
LINCS
CAM P SW, START/STOP
VTR P SW, EJECT
DEW
DEW DETECT
DEW SENSOR
VTR DD ON, CAM DD ON
LM LD
LM UNLD
M903 LOADING MOTOR
LOADING MOTOR DRIVE
IC504
VIDEO, AUDIO
CONTROL SIGNALS
FE ON
IC507
IC621 (1/2)
DRUM MOTOR DRIVE
DRUM D/A
M901 DRUM MOTOR
DRUM PG,FG
M
M902 CAPSTAN MOTOR
CAPSTAN FG
IC508
IC621 (1/2)
CAPSTAN MOTOR DRIVE
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2, TSB
REF V
CLOG PB SP/LP
IC101
REC/PB AMP
CH2
CH1
DRUM
FLYING ERASE
FLYING ERASE OSC
FE
IC506
WAVE SHAPER
DPG,DFG
CFG
VK-1P BOARD (See Page 149)
S502~507, 509
FUNCTION SWITCH
S501, 508
VTR SW, EJECT
POWER EJECT SWITCH
S951, S952
CAM SW, START/STOP
CAMERA STANDBY, START/STOP SWITCH
CAM SW
J951
REMOTE
EP OUT
J952
Ⓑ EARPHONE
(See Page 150)
RC-26P BOARD
S970, S971
ZOOM W, ZOOM T
ZOOM SWITCH
(See Page 161)
PS-180P BOARD
IC953
DC - DC CONVERTER
CAMERA POWER
32V
15V
CAM 5V
VTR POWER
REG 5V
VIDEO 5V
AUDIO 5V
MT UNREG
CAM UNREG
VTR ON, CAM ON
BATTERY

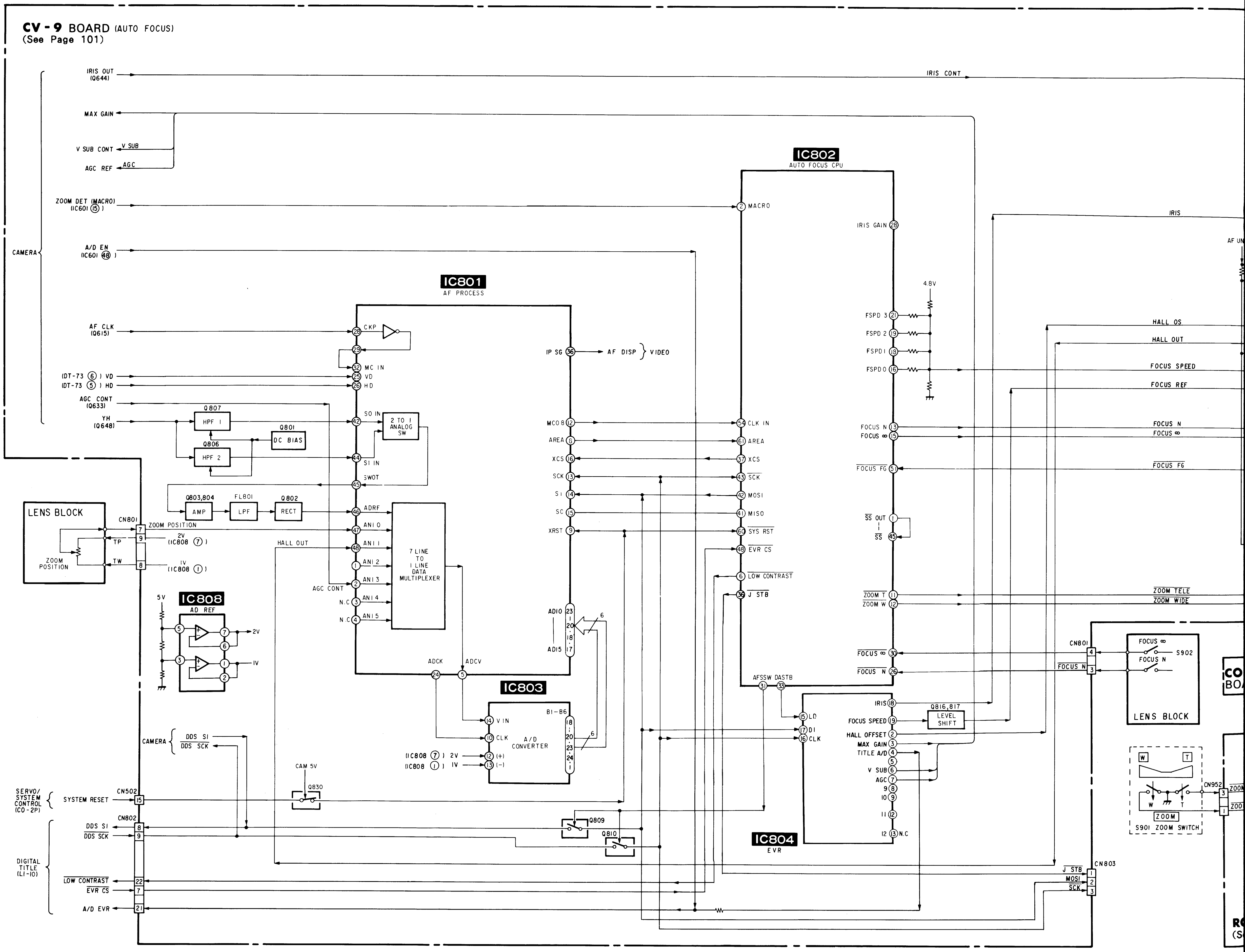
3-3. CAMERA BLOCK DIAGRAM

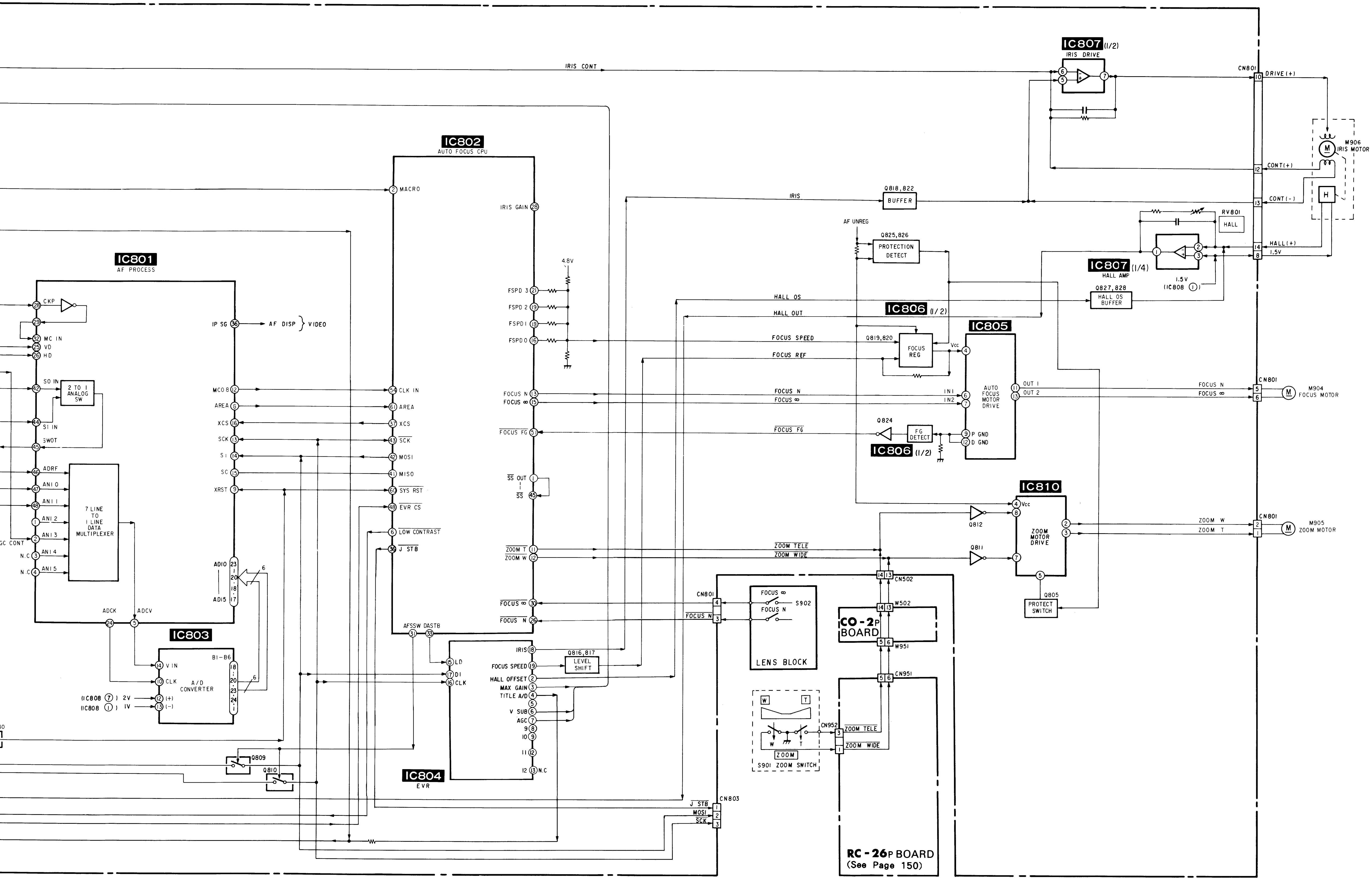

CD-10P BOARD (See Page 87)
CV-9 BOARD (CAMERA) (See Page 97)
DT-73 BOARD (See Page 164)
IC601 CCD IMAGER
Q601 BUFFER
Q602-603 V SUB REG
Q605-608 SHUTTER DRIVE
Q609,610 BUFFER
D601
W602 CCD OUT
W601
CN602
CN601
IC601 ①,②
IC601 ③,⑥
Q601 ⑤
9.5MHz IC601 ⑰
IC601 ⑱
IC601 ⑲
IC601 EVR/AUTO WHITE BALANCE CPU
IC603 (1/4) AW COMPARATOR
IC602 (1/2) SWITCH
IC610 RESET
X601 4MHz OSC
Q606
Q605
Q607
Q604
Q639
Q622
INTEGRATOR
BLANKING
Q623
Q624
Q621
Q625,638 BLANKING PULSE SEP
IC603 (1/4) TRIANGLE WAVEFORMER
IC603 (1/4) DC OUT BUFFER
IC602 (1/2) DISCHARGE
Q608 CURRENT SORCE
IC603 (1/4) CURRENT SORCE
SERVO/SYSTEM CONTROL (CO-2P)
LINCS POWER
CN502
CN603
DPCS
EVR CS
DDS S0
DDS SI
DDS SCK
AUTO FOCUS
IC608 EVR
IC609 EVR
IC003 SIGNAL SEPARATION AGC/IRIS CONTROL
IC006 SAMPLING
Q009(1/2) BUFFER
Q008, 011 HOLD BUFFER
FL601 LPF
IC004 CCD DEFECT COMPENSATOR
IC005 ROM
Q007
Q620,626-628 AGC REF
IC002 V DRIVE
IC001 TIMING GENERATOR
D006 CLAMP
D004 CLAMP
D003 -14V RECT
Q001 10V REG
Q010 10V REG
Q002-005 PG DRIVE
ATT
X603 28.375MHz OSC
Q632,633 AGC CONT BUFFER
Q635 WINDOW PULSE GENERATOR
Q646,647 AGC DET
Q603 AGC SWITCH
Q615 BUFFER
Q616 4FSC BUFFER
4.73MHz
DT-73 BOARD ⑮,⑯
DT-73 BOARD ⑧,⑪
DT-73 BOARD ⑨
IC604 ㉙
28.375MHz
DT-73 BOARD ①
14.188MHz
DT-73 BOARD ③
IC604 SYNC GENERATOR
SYNC GENERATOR
DIVIDER
PHASE COMP
LPF
X602
D605
CT601 FREQUENCY 17.7MHz VXO
Q609-611,614 IRIS DET
IC604 ①
IC604 ㉜
IC604 ㉛
S1 OUT
S2 OUT
Y OUT
CS OUT
CS GAIN
CS SLICE
AGC OUT
IRIS OUT
WINDOW
IRIS 64B
VG
AGC CONT
CLP0
XDL1
XDL2
CLP2
CLP3
ID
BACK LIGHT
SHUTTER EN
AF CLOCK
4FSC
HD
VD
SYNC
BLK
BF
LALT
SHUTTER EN


IC006
SAMPLING
BUFFER
HOLD BUFFER
PRE BLK
SHUTTER EN
CCD OUT
Y LPF OUT
(See Page 167)
MX-7 BOARD
IC002
MATRIX
IC001
1H DELAY
CLAMP
1H DELAY
CLP O
LPF
BUFFER
S1 IN
S2 IN
Y IN
C1 GAIN
C2 GAIN
Y1 GAIN
CO OUT
DL C1 IN
C1 OUT
DL C2 IN
YO OUT
DLY1 IN
Y1 OUT
DLY2 IN
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
XDL 2
XDL 1
CLP 3
5V
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
CS GAIN
CS Y OUT
SLICE
MAX
COMP
WINDOW PULSE GENERATOR
AGC CONT BUFFER
AGC DET
AGC SWITCH
MIX
AP GAIN
OFFSET
IC003
1H DELAY
FL602,603
L602,C622 14.2MHz BPF
Y DL OUT
YH OUT
YL-YH OUT
SW
BLANKING
HD MIX
FL602 DELAY
IRIS DET
AUTO FOCUS
SYNC GENERATOR
DIVIDER
PHASE COMP
IC605
PROCESS
MATRIX
YL MATRIX 2
GATE
PED
YL MIX
IC606
ENCODER
MODULATOR
BLANKING FADER SUPRESS
BURST GATE
1/2 & ALT
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
SHP CLP
FL606 0.18μsec DELAY
MX-7 BOARD (23)
MX-7 BOARD (26)
MX-7 BOARD (25)
0.5Vp-p
0.26Vp-p
0.6Vp-p
DT-73 BOARD (15),(16)
DT-73 BOARD (8),(11)
DT-73 BOARD (9)
IC604 (29)
IC606 (45)
IC606 (1)
IC606 (40)
0.28Vp-p
5Vp-p
4.7Vp-p
IC604 (1)
IC604 (32)
IC604 (31)
IC604 (30)

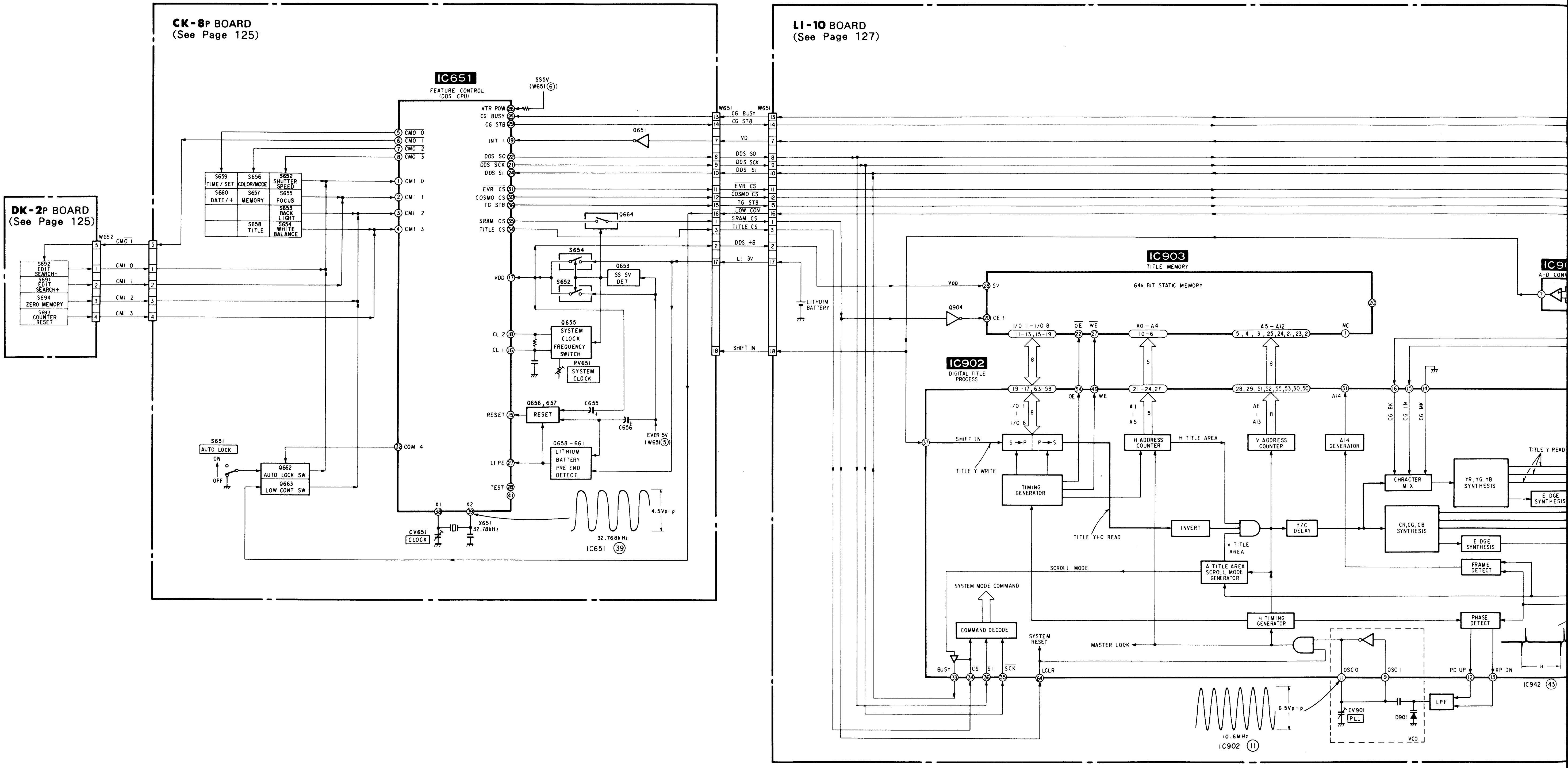

IC001
1H DELAY
CLAMP
1H DELAY
BUFFER
Q009(1/2)
Q008(1/2)
Q629-631
CO OUT
DL C1 IN
C1 OUT
DLC2 IN
YO OUT
DLY1 IN
Y1 OUT
DL Y2 IN
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
5V(D)
XDL 2
XDL 1
CLP 3
CLOCK
CLAMP
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
CS GAIN
CS Y OUT
VCS GAIN
HD
HD MIX
Q006
Q007
Q010
BLANKING
C BLK
COMP
SLICE
MAX
MX-7 BOARD ㉓
0.5Vp-p
MX-7 BOARD ㉖
0.26Vp-p
MX-7 BOARD ㉕
0.6Vp-p
Q001
FL602,603
Q634
Y DL OUT
Y(1) IN
Y GAIN
YL IN
AGC MIX
YH OUT
YL-YH OUT
SW
Q004
Q005
FL602
DELAY
Q648
YL
IC605
PROCESS
B GAIN
R GAIN
DELTA B
DELTA R
C LEVEL
C PED
B CONT
R CONT
PWD+VD
C-PED
R COMP
OFFSET CONT
G OUT
R-Y HUE
B-Y HUE
R-Y GAIN
B-Y GAIN
TITLE PEDISTAL
GATE DET
PED
MATRIX
YL MATRIX 1
YL MATRIX 2
S1 IN
S3 IN
S2 IN
DC IN
MAT GAIN2
MAT GAIN1
C-γ CONT
YL-YH OUT
YH OUT
YL MIX
Y PED
Y-γ CONT
CLP 2
GATE
0.76Vp-p
IC606 ㉔
IC607
BLANKING/CLAMP
PED
Q613,614
TITLE (R-Y) MIX
Q618
LPF
Q642,643
TITLE (B-Y) MIX
Q645
TY MATRIX
IC606 ⑳
1Vp-p
CHECK POINT ARRAY
Y(LPF) OUT
SHTTER EN
YO
Y1
CO
C1
V SUB
CCD OUT
YH
R-Y
B-Y
C OUT
MODE
G OUT
GND
VIDEO OUT
AW ADJ
CAM ADJ
IC606
ENCODER
MODULATOR
DET
BLANKING FADER SUPRESS
C OUT
C IN
CS-Y
CS AGC
B LEVEL CONT
BURST LEVEL
LALT
AF SC
1/2 & ALT
4FSC
MOD
BURST GATE
HUE
BF
YL-YH
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
SYNC CHARACTER MIX
VIDEO OUT
FADER
CHARACTER
EVF OUT
DLD
DLE NOISE
SHP LEVEL
Y LEVEL
SYNC LEVEL
WC
SET UP
SYNC
BLK
FL606
0.18μsec DELAY
L609,C656
4.43MHz BPF
Q617,619
Y/C MIX
CAM OUT
VIDEO OUT
Q602
Q641
CLP 2
Q640
AGC CONT
IC606 ㊺
IC606 ①
0.28Vp-p
IC606 ㊵
0.5Vp-p
MIX
CN802
TB
TG
TR
C BLK
CHARACTER
A/D Y
VD
HD
TG STB
DDS SO
DDS SCK
DDS SI
EVR CS
DIGITAL TITLE (L1-10)
CHARACTOR
5V

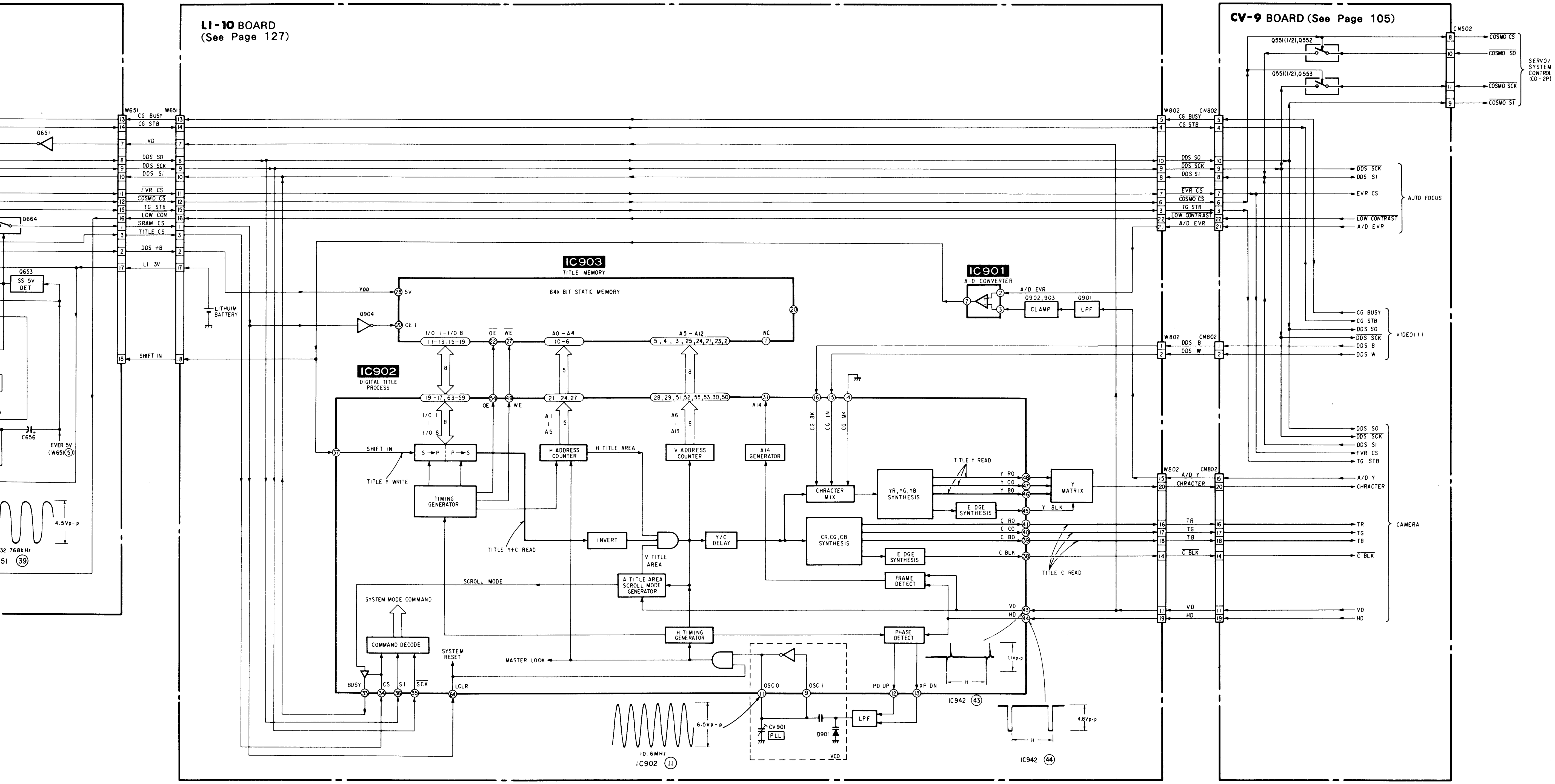
3-4. AUTO FOCUS BLOCK DIAGRAM


CV-9 BOARD (AUTO FOCUS)
(See Page 101)
CAMERA
IRIS OUT (Q644)
IRIS CONT
MAX GAIN
V SUB CONT
V SUB
AGC REF
AGC
ZOOM DET (MACRO) (IC601 ⑮)
A/D EN (IC601 ㊽)
AF CLK (Q615)
(DT-73 ⑥) VD
(DT-73 ⑤) HD
AGC CONT (Q633)
YH (Q648)
IC801
AF PROCESS
CKP
MC IN
VD
HD
SO IN
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
N.C
2 TO 1 ANALOG SW
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF DISP
VIDEO
MCO 8
AREA
XCS
SCK
SI
SC
XRST
ADIO
ADI5
ADCK
ADCV
Q807
HPF 1
Q806
HPF 2
Q801
DC BIAS
Q803,804
AMP
FL801
LPF
Q802
RECT
AGC CONT
HALL OUT
LENS BLOCK
ZOOM POSITION
TP
TW
CN801
ZOOM POSITION
2V (IC808 ⑦)
IV (IC808 ①)
5V
IC808
AD REF
2V
IV
IC803
A/D CONVERTER
V IN
CLK
(+)
(−)
B1-B6
6
(IC808 ⑦) 2V
(IC808 ①) IV
CAMERA
DDS SI
DDS SCK
CAM 5V
Q830
SERVO/ SYSTEM CONTROL (CO-2P)
SYSTEM RESET
CN502
CN802
DIGITAL TITLE (LI-10)
DDS SI
DDS SCK
LOW CONTRAST
EVR CS
A/D EVR
Q809
Q810
IC802
AUTO FOCUS CPU
MACRO
IRIS GAIN
4.8V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
FOCUS ∞
FOCUS N
AFSSW
DASTB
IC804
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
V SUB
AGC
N.C
Q816,817
LEVEL SHIFT
IRIS
AF UN
HALL OS
HALL OUT
FOCUS SPEED
FOCUS REF
FOCUS N
FOCUS ∞
FOCUS FG
ZOOM TELE
ZOOM WIDE
CN801
FOCUS N
FOCUS ∞
FOCUS N
S902
LENS BLOCK
CO
BO
W
T
ZOOM
S901 ZOOM SWITCH
CN952
ZOOM
ZOOM
CN803
J STB
MOSI
SCK
RC
(S

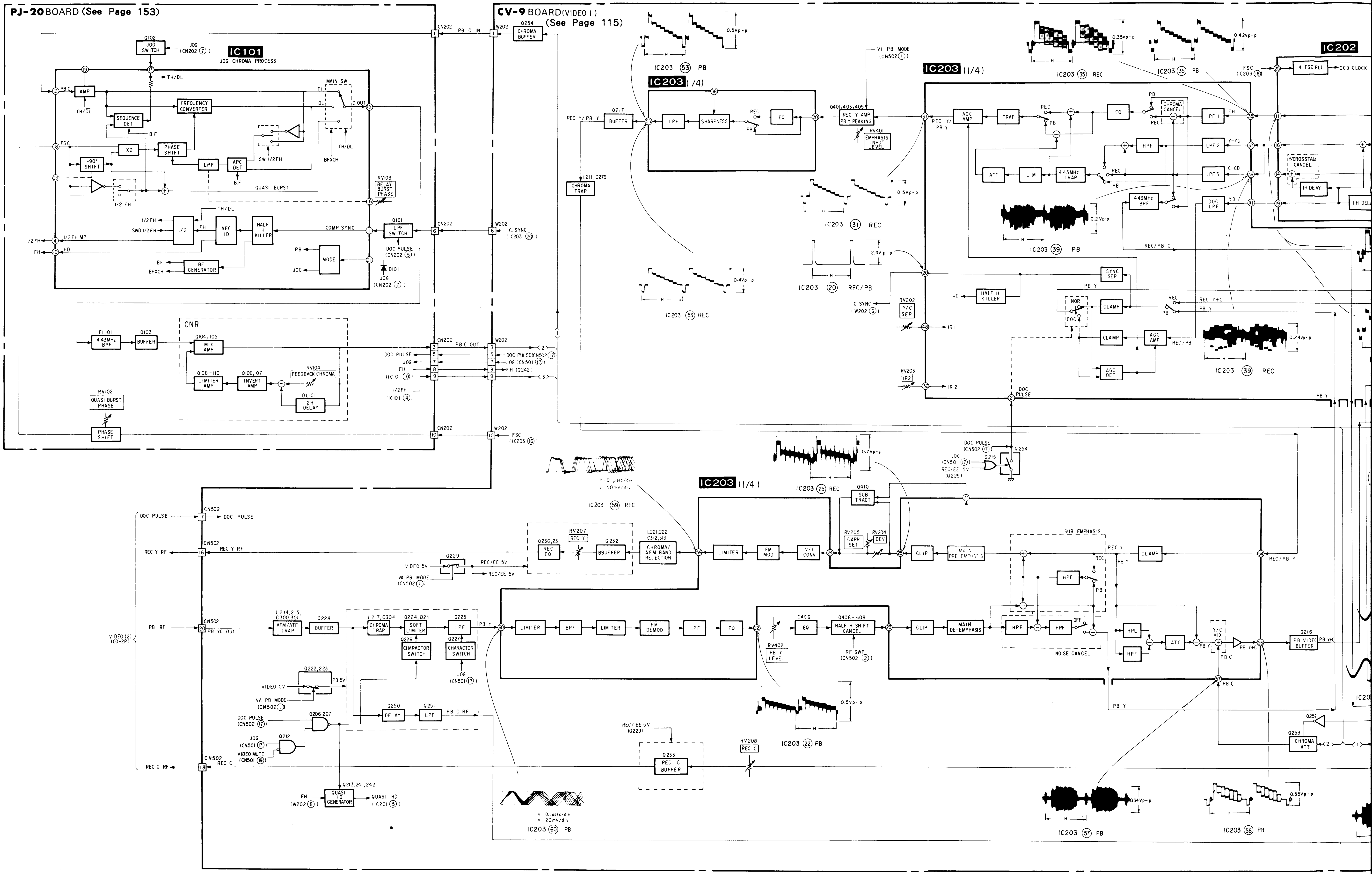

IRIS CONT
IC807 (1/2)
IRIS DRIVE
CN801
DRIVE(+)
M906
IRIS MOTOR
CONT(+)
CONT(-)
H
IC802
AUTO FOCUS CPU
MACRO
IRIS GAIN
IRIS
Q818,822
BUFFER
AF UNREG
Q825,826
PROTECTION DETECT
RV801
HALL
HALL(+)
1.5V
IC807 (1/4)
HALL AMP
1.5V
(IC808 ①)
Q827,828
HALL OS BUFFER
IC801
AF PROCESS
CKP
MC IN
VD
HD
SO IN
2 TO 1 ANALOG SW
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
GC CONT
N.C
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF DISP } VIDEO
MCO 8
AREA
XCS
SCK
SI
SC
XRST
ADIO
ADI5
ADCK
ADCV
4.8V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
HALL OS
HALL OUT
IC806 (1/2)
IC805
FOCUS SPEED
FOCUS REF
Q819,820
FOCUS REG
Vcc
AUTO FOCUS MOTOR DRIVE
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
FOCUS N
FOCUS ∞
IN1
IN2
OUT 1
OUT 2
M904
FOCUS MOTOR
FOCUS FG
Q824
FG DETECT
P GND
D GND
IC806 (1/2)
SS OUT
SS
IC810
Q812
Q811
ZOOM MOTOR DRIVE
ZOOM W
ZOOM T
M905
ZOOM MOTOR
ZOOM TELE
ZOOM WIDE
CN502
Q805
PROTECT SWITCH
FOCUS ∞
FOCUS N
S902
LENS BLOCK
W502
CO-2P BOARD
W951
CN951
AFSSW
DASTB
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
V SUB
AGC
N.C
Q816,817
LEVEL SHIFT
LD
DI
CLK
IC803
B1-B6
V IN
CLK
A/D CONVERTER
(IC808 ⑦) 2V
(IC808 ①) 1V
(+)
(-)
Q809
Q810
IC804
EVR
W
T
ZOOM
S901 ZOOM SWITCH
CN952
CN803
J STB
MOSI
SCK
RC-26P BOARD
(See Page 150)

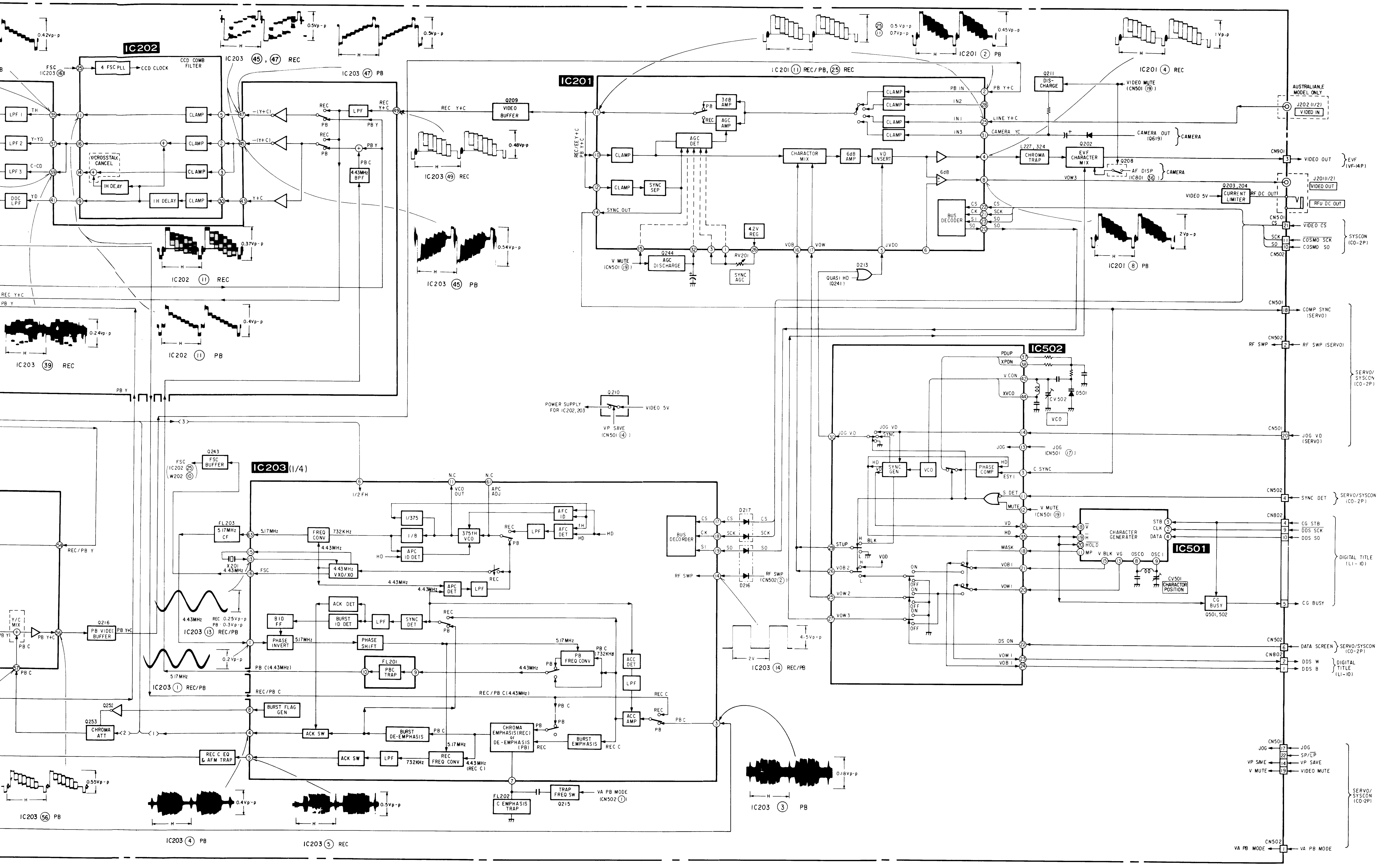
3-5. DIGITAL TITLE BLOCK DIAGRAM


DK-2P BOARD
(See Page 125)
S692 EDIT SEARCH-
S691 EDIT SEARCH+
S694 ZERO MEMORY
S693 COUNTER RESET
W652
CMO 1
CMI 0
CMI 1
CMI 2
CMI 3
CK-8P BOARD
(See Page 125)
S659 TIME / SET
S656 COLOR/MODE
S652 SHUTTER SPEED
S660 DATE / +
S657 MEMORY
S655 FOCUS
S653 BACK LIGHT
S658 TITLE
S654 WHITE BALANCE
S651 AUTO LOCK
ON
OFF
Q662 AUTO LOCK SW
Q663 LOW CONT SW
IC651
FEATURE CONTROL (DDS CPU)
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
COM 4
VTR POW
CG BUSY
CG STB
INT 1
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
SRAM CS
TITLE CS
VDD
CL 2
CL 1
RESET
LI PE
TEST
X1
X2
CV651 CLOCK
X651 32.78kHz
SS5V (W651 ⑥)
Q651
Q664
S654
S652
Q653 SS 5V DET
Q655 SYSTEM CLOCK FREQUENCY SWITCH
RV651 SYSTEM CLOCK
Q656, 657 RESET
C655
C656
EVER 5V (W651 ⑤)
Q658 - 661 LITHIUM BATTERY PRE END DETECT
4.5Vp-p
32.768kHz
IC651 (39)
W651
CG BUSY
CG STB
VD
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
LOW CON
SRAM CS
TITLE CS
DDS +B
LI 3V
SHIFT IN
LI-10 BOARD
(See Page 127)
LITHUIM BATTERY
IC903
TITLE MEMORY
64k BIT STATIC MEMORY
VDD
5V
Q904
CE 1
I/O 1 - I/O 8
OE
WE
A0 - A4
A5 - A12
NC
IC902
DIGITAL TITLE PROCESS
OE
WE
A1 - A5
A6 - A13
A14
I/O 1 - I/O 8
SHIFT IN
S → P
P → S
TITLE Y WRITE
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
CG BK
CG IN
CG MK
TITLE Y+C READ
INVERT
Y/C DELAY
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
CHRACTER MIX
YR, YG, YB SYNTHESIS
E DGE SYNTHESIS
CR, CG, CB SYNTHESIS
E DGE SYNTHESIS
FRAME DETECT
TITLE Y READ
SCROLL MODE
SYSTEM MODE COMMAND
COMMAND DECODE
SYSTEM RESET
MASTER LOCK
H TIMING GENERATOR
PHASE DETECT
BUSY
CS
SI
SCK
LCLR
OSC O
OSC I
PD UP
XP DN
CV901 PLL
D901
LPF
VCO
6.5Vp-p
10.6MHz
IC902 (11)
IC942 (43)
H
IC9
A-D CONV

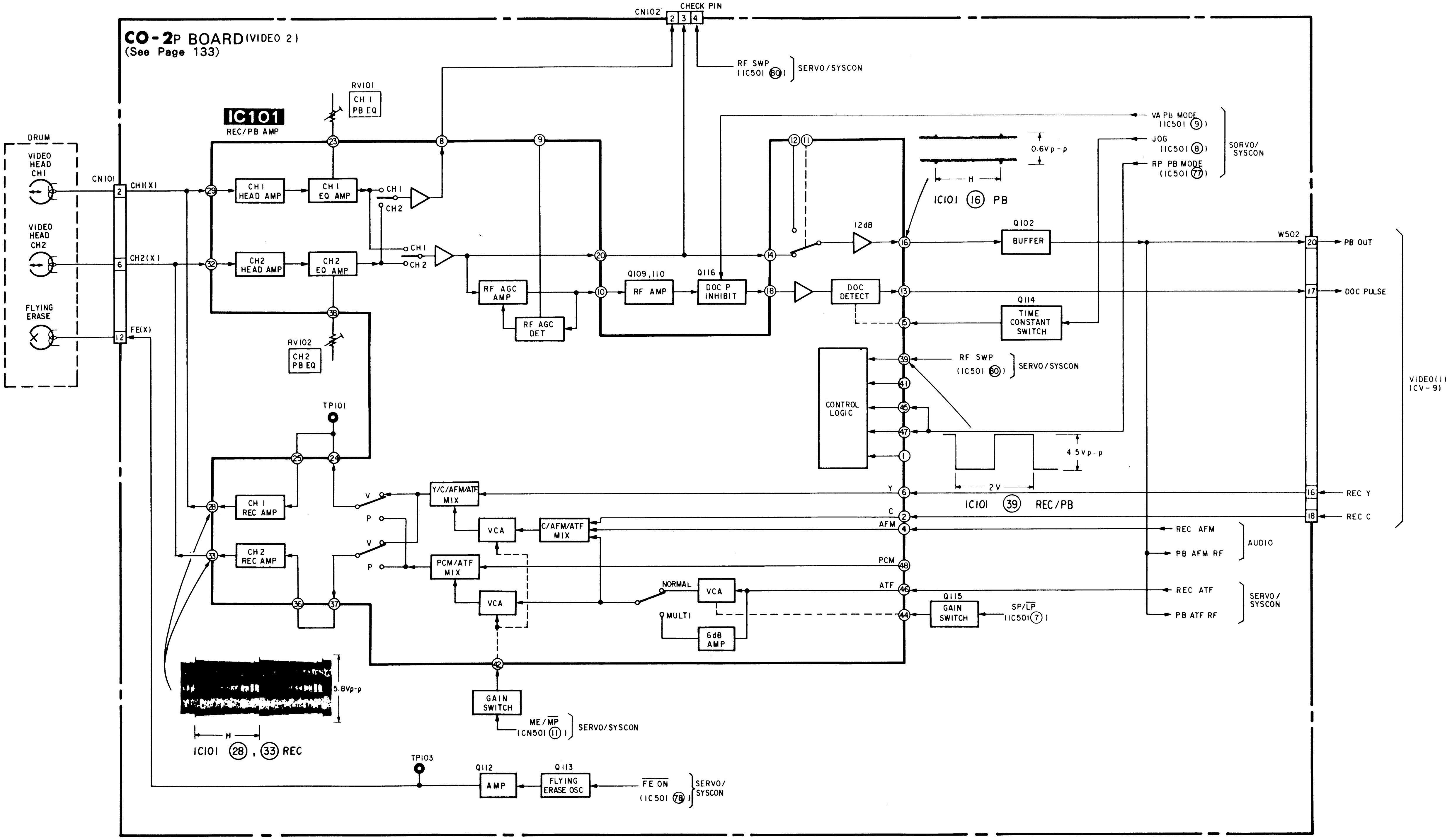

LI-10 BOARD
(See Page 127)
CV-9 BOARD (See Page 105)
W651
CG BUSY
CG STB
Q651
VD
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
LOW CON
SRAM CS
TITLE CS
Q664
DDS +B
LI 3V
Q653
SS 5V DET
LITHUIM BATTERY
SHIFT IN
C656
EVER 5V (W651⑤)
4.5Vp-p
32.768kHz
51 ㊴
IC903
TITLE MEMORY
64k BIT STATIC MEMORY
VDD
㉘ 5V
Q904
⑳ CE 1
I/O 1 - I/O 8
11-13,15-19
OE
WE
A0 - A4
10-6
A5 - A12
5, 4, 3, 25, 24, 21, 23, 2
NC
IC902
DIGITAL TITLE PROCESS
19-17, 63-59
21-24, 27
28, 29, 51, 52, 55, 53, 30, 50
A14
A1 I A5
A6 I A13
I/O 1 I I/O 8
S→P
P→S
SHIFT IN
TITLE Y WRITE
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
TITLE Y+C READ
INVERT
Y/C DELAY
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
SCROLL MODE
SYSTEM MODE COMMAND
COMMAND DECODE
SYSTEM RESET
MASTER LOCK
H TIMING GENERATOR
BUSY
CS
SI
SCK
LCLR
OSC O
OSC I
CV901
PLL
D901
VCO
LPF
6.5Vp-p
10.6MHz
IC902 ⑪
PHASE DETECT
PD UP
XP DN
FRAME DETECT
CG BK
CG IN
CG MK
CHRACTER MIX
YR, YG, YB SYNTHESIS
TITLE Y READ
Y RO
Y CO
Y BO
E DGE SYNTHESIS
Y BLK
Y MATRIX
CR, CG, CB SYNTHESIS
C RO
C CO
C BO
C BLK
TITLE C READ
VD
HD
1.1Vp-p
H
IC942 ㊸
4.8Vp-p
IC942 ㊹
IC901
A-D CONVERTER
A/D EVR
Q902,903
CLAMP
Q901
LPF
W802
CN802
LOW CONTRAST
A/D EVR
DDS B
DDS W
A/D Y
CHRACTER
TR
TG
TB
C BLK
CN502
Q551(1/2),Q552
Q551(1/2),Q553
COSMO CS
COSMO SO
COSMO SCK
COSMO SI
SERVO/ SYSTEM CONTROL (CO-2P)
AUTO FOCUS
VIDEO(1)
CAMERA

3-6. VIDEO BLOCK DIAGRAM(1)

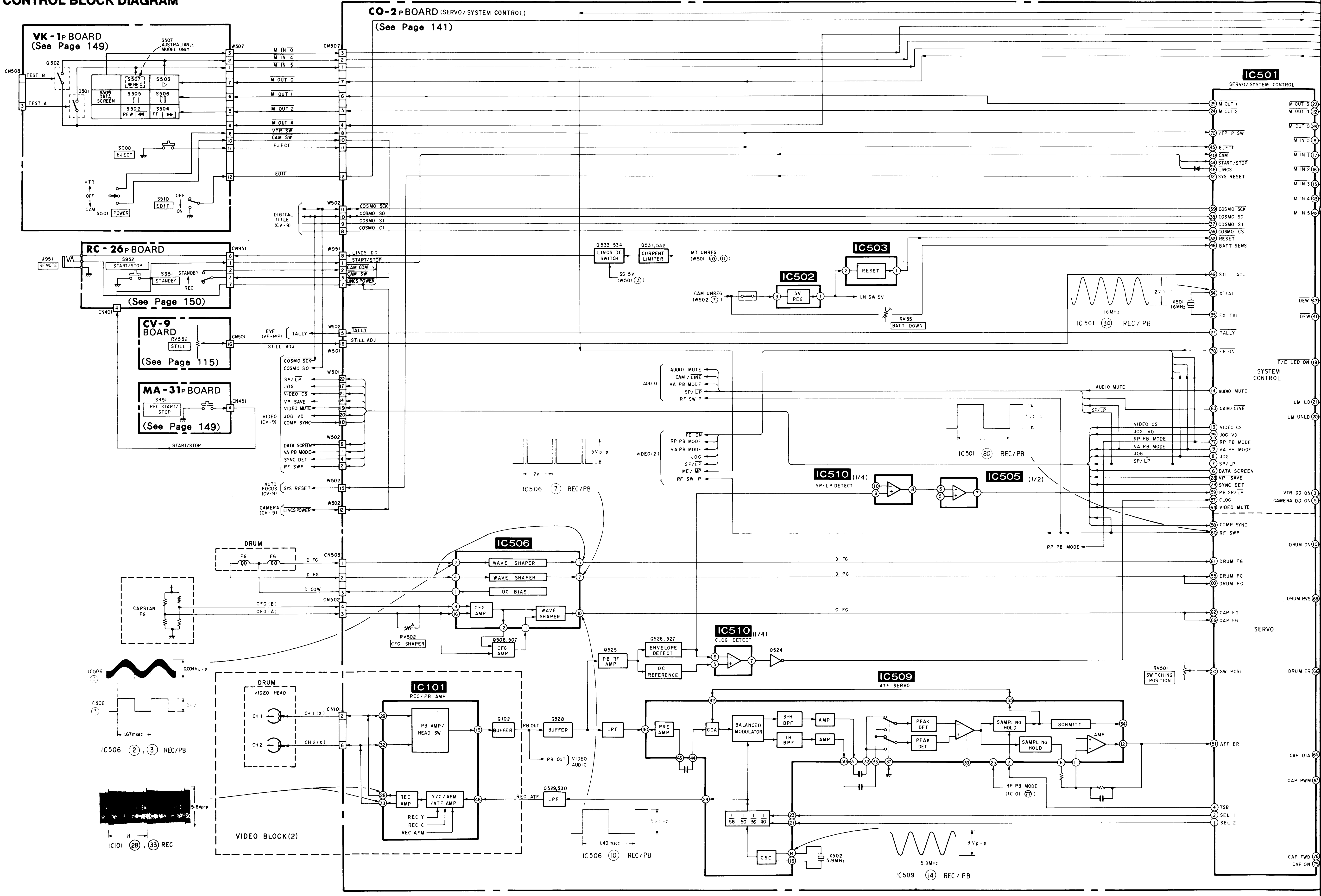

PJ-20 BOARD (See Page 153)
IC101
JOG CHROMA PROCESS
Q102 JOG SWITCH
SEQUENCE DET
FREQUENCY CONVERTER
MAIN SW
-90° SHIFT
X2
PHASE SHIFT
LPF
APC DET
QUASI BURST
RV103 DELAY BURST PHASE
1/2
AFC ID
HALF H KILLER
COMP SYNC
Q101 LPF SWITCH
MODE
BF GENERATOR
D101
CNR
FL101 4.43MHz BPF
Q103 BUFFER
Q104,105 MIX AMP
Q108-110 LIMITER AMP
Q106,107 INVERT AMP
RV104 FEEDBACK CHROMA
DL101 2H DELAY
RV102 QUASI BURST PHASE
PHASE SHIFT
CN202
PB C IN
PB C OUT
DOC PULSE
JOG
FH
1/2FH
FSC
CV-9 BOARD (VIDEO 1) (See Page 115)
W202
Q254 CHROMA BUFFER
IC203 (1/4)
Q217 BUFFER
SHARPNESS
EQ
Q401,403,405 REC Y AMP PB Y PEAKING
RV401 EMPHASIS INPUT LEVEL
L211, C276 CHROMA TRAP
AGC AMP
TRAP
4.43MHz TRAP
ATT
LIM
4.43MHz BPF
HPF
LPF 1
LPF 2
LPF 3
CHROMA CANCEL
DOC LPF
SYNC SEP
HALF H KILLER
NOR DOC
CLAMP
AGC AMP
AGC DET
RV202 Y/C SEP
RV203 IR2
IC202
4 FSC PLL
CCD CLOCK
Y/CROSSTALK CANCEL
1H DELAY
IC203 (53) PB
IC203 (31) REC
IC203 (20) REC/PB
IC203 (53) REC
IC203 (35) REC
IC203 (35) PB
IC203 (39) PB
IC203 (39) REC
IC203 (25) REC
IC203 (59) REC
IC203 (22) PB
IC203 (60) PB
IC203 (57) PB
IC203 (56) PB
CN502
DOC PULSE
REC Y RF
PB RF
REC C RF
VIDEO (2) (CD-2P)
Q230,231 REC EQ
RV207 REC Y
Q232 BBUFFER
L221,222 C312,313 CHROMA/AFM BAND REJECTION
LIMITER
FM MOD
V/I CONV
Q410 SUB TRACT
RV205 CARR SET
RV204 DEV
CLIP
MAIN PRE-EMPHASIS
SUB EMPHASIS
L214,215, C300,301 AFM/ATF TRAP
Q228 BUFFER
L217,C304 CHROMA TRAP
Q224,D211 SOFT LIMITER
Q225 LPF
Q226 CHARACTOR SWITCH
Q227 CHARACTOR SWITCH
BPF
FM DEMOD
RV402 PB Y LEVEL
Q409 EQ
Q406-408 HALF H SHIFT CANCEL
MAIN DE-EMPHASIS
NOISE CANCEL
Y/C MIX
Q216 PB VIDEO BUFFER
Q222,223
Q206,207
Q212
Q250 DELAY
Q251 LPF
Q213,241,242 QUASI HD GENERATOR
Q233 REC C BUFFER
RV208 REC C
Q253 CHROMA ATT
Q229
D215

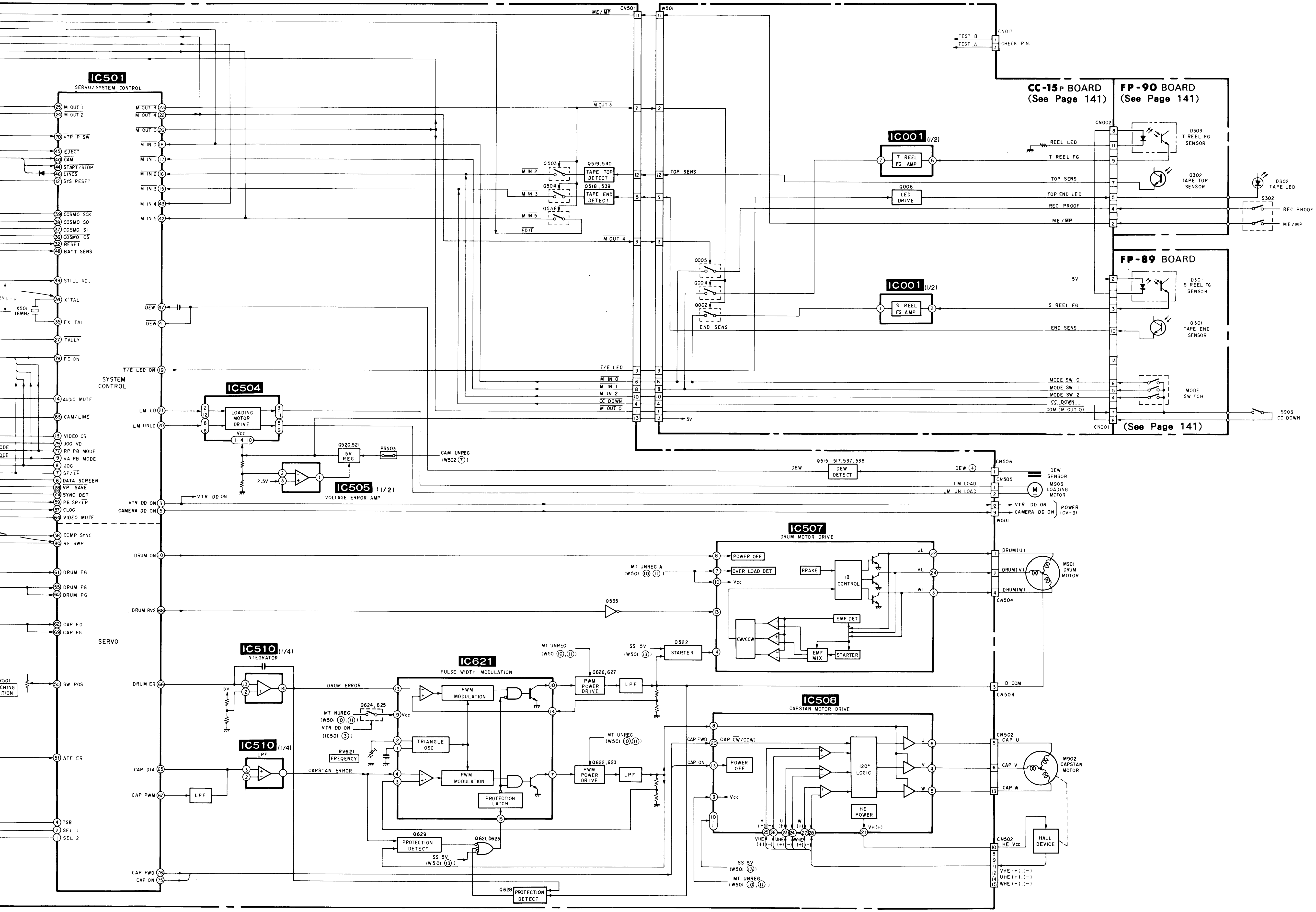

IC202
4 FSC PLL
CCD CLOCK
CCD COMB FILTER
CLAMP
1H DELAY
V.CROSSTALK CANCEL
LPF 1
LPF 2
LPF 3
DOC LPF
IC201
AGC DET
3dB AMP
AGC AMP
SYNC SEP
CHARACTOR MIX
6dB AMP
VD INSERT
BUS DECODER
4.2V REG
SYNC AGC
Q244 AGC DISCHARGE
Q209 VIDEO BUFFER
Q211 DIS-CHARGE
L227, 324 CHROMA TRAP
Q202 EVF CHARACTER MIX
Q208 AF DISP
Q203, 204 CURRENT LIMITER
AUSTRALIAN,E MODEL ONLY
J202 (1/2) VIDEO IN
J201 (1/2) VIDEO OUT
RFU DC OUT
CN901 VIDEO OUT EVF (VF-14P)
CAMERA OUT (Q619) CAMERA
VIDEO MUTE (CN501 ⑲)
IC502
PDUP
XPDN
V CON
XVCO
CV502
D501
VCO
JOG VD
SYNC GEN
PHASE COMP
C SYNC
S DET
MUTE
VD
HD
MASK
VOB1
VOW1
STUP
VOB 2
VOW 2
VOW 3
DS ON
IC501
CHARACTER GENERATER
STB
CLK
DATA
HOLD
MP
V BLK
VG
OSCO
OSCI
CV501 CHARACTOR POSITION
CG BUSY Q501, 502
CN501 COMP SYNC (SERVO)
CN502 RF SWP (SERVO)
CN501 JOG VD (SERVO)
CN502 SYNC DET SERVO/SYSCON (CO-2P)
CN802 CG STB
DDS SCK
DDS SO
DIGITAL TITLE (L1-10)
CG BUSY
DATA SCREEN SERVO/SYSCON (CO-2P)
DDS W
DDS B
JOG
SP/LP
VP SAVE
VIDEO MUTE
SERVO/SYSCON (CO-2P)
VA PB MODE
VIDEO CS
COSMO SCK
COSMO SO
SYSCON (CO-2P)
Q210 POWER SUPPLY FOR IC202, 203
VIDEO 5V
VP SAVE (CN501 ⑭)
QUASI HD (Q241)
D213
D216
D217
RF SWP (CN502 ②)
IC203 (1/4)
Q243 FSC BUFFER
FL203 5.17MHz CF
FREQ CONV
1/375
1/8
375fH VCO
AFC ID
AFC DET
APC ID DET
4.43MHz VXO/XO
APC DET
LPF
ACK DET
BURST ID DET
SYNC DET
BID FF
PHASE INVERT
PHASE SHIFT
FL201 PBC TRAP
PB FREQ CONV
ACC DET
ACC AMP
BURST FLAG GEN
ACK SW
BURST DE-EMPHASIS
CHROMA EMPHASIS(REC) or DE-EMPHASIS(PB)
BURST EMPHASIS
REC FREQ CONV
REC C EQ & AFM TRAP
Q215 TRAP FREQ SW
FL202 C EMPHASIS TRAP
VA PB MODE (CN502 ①)
Q216 PB VIDEO BUFFER
Y/C MIX
Q252
Q253 CHROMA ATT
IC203 ㊺, ㊼ REC
IC203 ㊼ PB
IC203 ㊾ REC
IC203 ㊺ PB
IC202 ⑪ REC
IC202 ⑪ PB
IC203 ㊴ REC
IC201 ⑪ REC/PB, ㉕ REC
IC201 ② PB
IC201 ④ REC
IC201 ⑧ PB
IC203 ⑬ REC/PB
IC203 ① REC/PB
IC203 ⑭ REC/PB
IC203 ③ PB
IC203 ㊱ PB
IC203 ④ PB
IC203 ⑤ REC
0.42Vp-p
0.5Vp-p
0.48Vp-p
0.54Vp-p
0.37Vp-p
0.4Vp-p
0.24Vp-p
0.45Vp-p
1Vp-p
2Vp-p
4.5Vp-p
0.55Vp-p
REC 0.25Vp-p PB 0.3Vp-p
0.2Vp-p
4.43MHz
5.17MHz
732KHz

3-7. VIDEO BLOCK DIAGRAM(2)


CO-2P BOARD (VIDEO 2)
(See Page 133)
DRUM
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
CN101
CH1(X)
CH2(X)
FE(X)
IC101
REC/PB AMP
RV101
CH 1 PB EQ
RV102
CH2 PB EQ
CH 1 HEAD AMP
CH2 HEAD AMP
CH 1 EQ AMP
CH2 EQ AMP
CH 1
CH 2
RF AGC AMP
RF AGC DET
Q109,110
RF AMP
Q116
DOC P INHIBIT
12dB
DOC DETECT
Q102
BUFFER
Q114
TIME CONSTANT SWITCH
CONTROL LOGIC
CN102
CHECK PIN
RF SWP (IC501 80) SERVO/SYSCON
VA PB MODE (IC501 9)
JOG (IC501 8)
RP PB MODE (IC501 77)
SORVO/SYSCON
0.6Vp-p
H
IC101 16 PB
W502
PB OUT
DOC PULSE
VIDEO(1) (CV-9)
RF SWP (IC501 80) SERVO/SYSCON
4.5Vp-p
2V
IC101 39 REC/PB
REC Y
REC C
Y
C
AFM
PCM
ATF
REC AFM
PB AFM RF
AUDIO
REC ATF
PB ATF RF
SERVO/SYSCON
Q115
GAIN SWITCH
SP/LP (IC501 7)
TP101
CH 1 REC AMP
CH 2 REC AMP
V
P
Y/C/AFM/ATF MIX
C/AFM/ATF MIX
VCA
PCM/ATF MIX
NORMAL
MULTI
6dB AMP
GAIN SWITCH
ME/MP (CN501 11) SERVO/SYSCON
5.8Vp-p
H
IC101 28, 33 REC
TP103
Q112
AMP
Q113
FLYING ERASE OSC
FE ON (IC501 78) SERVO/SYSCON

3-8. SERVO, SYSTEM CONTROL BLOCK DIAGRAM


CO-2P BOARD (SERVO/SYSTEM CONTROL)
(See Page 141)
VK-1P BOARD
(See Page 149)
S507 AUSTRALIAN,E MODEL ONLY
CN508
TEST B
TEST A
Q502
Q501
S509 DATA SCREEN
S507 ●REC
S503 ▷
S505 □
S506 ||
S502 REW ◀◀
S504 FF ▶▶
S508 EJECT
VTR OFF CAM
S501 POWER
S510 EDIT
OFF ON
W507
CN507
M IN 0
M IN 4
M IN 5
M OUT 0
M OUT 1
M OUT 2
M OUT 4
VTR SW
CAM SW
EJECT
EDIT
DIGITAL TITLE (CV-9)
W502
COSMO SCK
COSMO SO
COSMO SI
COSMO CI
RC-26P BOARD
(See Page 150)
J951 REMOTE
S952 START/STOP
S951 STANDBY
STANDBY
REC
CN951
W951
LINCS DC
START/STOP
CAM COM
CAM SW
LINCS POWER
CN401
CV-9 BOARD
RV552 STILL
(See Page 115)
CN501
EVF (VF-14P)
TALLY
STILL ADJ
W501
MA-31P BOARD
S451 REC START/STOP
CN451
(See Page 149)
START/STOP
VIDEO (CV-9)
SP/LP
JOG
VIDEO CS
VP SAVE
VIDEO MUTE
JOG VD
COMP SYNC
DATA SCREEN
VA PB MODE
SYNC DET
RF SWP
AUTO FOCUS (CV-9)
SYS RESET
CAMERA (CV-9)
LINCS POWER
DRUM
PG
FG
D FG
D PG
D COM
CN503
CN502
CAPSTAN FG
CFG (B)
CFG (A)
IC506
0.004Vp-p
1.67msec
IC506 ②, ③ REC/PB
5.8Vp-p
H
IC101 ㉘, ㉝ REC
VIDEO BLOCK(2)
VIDEO HEAD
CH 1
CH 2
CH 1 (X)
CH 2 (X)
CN101
IC101
REC/PB AMP
PB AMP/HEAD SW
REC AMP
Y/C/AFM /ATF AMP
REC Y
REC C
REC AFM
Q102 BUFFER
PB OUT
PB OUT VIDEO, AUDIO
Q528 BUFFER
Q529,530 LPF
REC ATF
IC506
WAVE SHAPER
WAVE SHAPER
DC BIAS
CFG AMP
WAVE SHAPER
Q506,507 CFG AMP
RV502 CFG SHAPER
5Vp-p
2V
IC506 ⑦ REC/PB
1.49msec
IC506 ⑩ REC/PB
Q533,534 LINCS DC SWITCH
Q531,532 CURRENT LIMITER
MT UNREG (W501 ⑩,⑪)
SS 5V (W501 ⑬)
IC503
RESET
IC502
5V REG
CAM UNREG (W502 ⑦)
UN SW 5V
RV551 BATT DOWN
2Vp-p
X501 16MHz
16MHz
IC501 ㉞ REC/PB
AUDIO
AUDIO MUTE
CAM/LINE
VA PB MODE
SP/LP
RF SW P
VIDEO(2)
FE ON
RP PB MODE
VA PB MODE
JOG
SP/LP
ME/MP
RF SW P
IC501 ⑳ REC/PB
IC510 (1/4)
SP/LP DETECT
IC505 (1/2)
RP PB MODE
D FG
D PG
C FG
Q525 PB RF AMP
Q526,527 ENVELOPE DETECT
DC REFERENCE
IC510 (1/4)
CLOG DETECT
Q524
IC509
ATF SERVO
LPF
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
AMP
PEAK DET
PEAK DET
SAMPLING HOLD
SAMPLING HOLD
SCHMITT
AMP
58 50 36 40
OSC
X502 5.9MHz
RP PB MODE (IC101 ⑦)
3Vp-p
5.9MHz
IC509 ⑭ REC/PB
RV501 SWITCHING POSITION
IC501
SERVO/SYSTEM CONTROL
M OUT 1
M OUT 2
VTR P SW
EJECT
CAM
START/STOP
LINCS
SYS RESET
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
RESET
BATT SENS
STILL ADJ
X'TAL
EX TAL
TALLY
FE ON
AUDIO MUTE
CAM/LINE
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
DATA SCREEN
VP SAVE
SYNC DET
PB SP/LP
CLOG
VIDEO MUTE
COMP SYNC
RF SWP
DRUM FG
DRUM PG
DRUM PG
CAP FG
CAP FG
SW POSI
ATF ER
TSB
SEL 1
SEL 2
M OUT 3
M OUT 4
M OUT 0
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
DEW
DEW
T/E LED ON
SYSTEM CONTROL
LM LD
LM UNLD
VTR DD ON
CAMERA DD ON
DRUM ON
DRUM RVS
SERVO
DRUM ER
CAP DIA
CAP PWM
CAP FWD
CAP ON


IC501
SERVO/SYSTEM CONTROL
M OUT 1
M OUT 2
VTP P SW
EJECT
CAM
START/STOP
LINCS
SYS RESET
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
RESET
BATT SENS
STILL ADJ
X'TAL
X501 16MHz
EX TAL
TALLY
FE ON
AUDIO MUTE
CAM/LINE
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
DATA SCREEN
VP SAVE
SYNC DET
PB SP/LP
CLOG
VIDEO MUTE
COMP SYNC
RF SWP
DRUM FG
DRUM PG
DRUM PG
CAP FG
CAP FG
SERVO
SW POSI
ATF ER
TSB
SEL 1
SEL 2
M OUT 3
M OUT 4
M OUT 0
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
DEW
DEW
SYSTEM CONTROL
T/E LED ON
LM LD
LM UNLD
VTR DD ON
CAMERA DD ON
DRUM ON
DRUM RVS
DRUM ER
CAP DIA
CAP PWM
CAP FWD
CAP ON
ME/MP
CN501
W501
Q503
Q504
Q536
Q519, 540 TAPE TOP DETECT
Q518, 539 TAPE END DETECT
EDIT
TOP SENS
T/E LED
CC DOWN
IC504
LOADING MOTOR DRIVE
Vcc
Q520, 521 5V REG
PS503
CAM UNREG (W502 ⑦)
IC505 (1/2)
VOLTAGE ERROR AMP
2.5V
Q005
Q004
Q002
END SENS
5V
TEST B
TEST A
CN017 (CHECK PIN)
CC-15P BOARD (See Page 141)
FP-90 BOARD (See Page 141)
CN002
IC001 (1/2)
T REEL FG AMP
REEL LED
T REEL FG
Q006 LED DRIVE
TOP END LED
REC PROOF
ME/MP
D303 T REEL FG SENSOR
Q302 TAPE TOP SENSOR
D302 TAPE LED
S302
REC PROOF
ME/MP
FP-89 BOARD
IC001 (1/2)
S REEL FG AMP
S REEL FG
END SENS
D301 S REEL FG SENSOR
Q301 TAPE END SENSOR
MODE SW 0
MODE SW 1
MODE SW 2
CC DOWN
COM (M OUT 0)
MODE SWITCH
S903 CC DOWN
CN001
(See Page 141)
Q515-517, 537, 538
DEW DETECT
DEW ⊕
CN506
DEW SENSOR
CN505
LM LOAD
LM UN LOAD
M903 LOADING MOTOR
VTR DD ON
CAMERA DD ON
POWER (CV-9)
IC507
DRUM MOTOR DRIVE
POWER OFF
OVER LOAD DET
BRAKE
18 CONTROL
MT UNREG A (W501 ⑩, ⑪)
CW/CCW
EMF DET
EMF MIX
STARTER
Q535
SS 5V (W501 ⑬)
Q522 STARTER
UL
VL
WL
DRUM(U)
DRUM(V)
DRUM(W)
M901 DRUM MOTOR
CN504
D COM
IC510 (1/4)
INTEGRATOR
DRUM ERROR
IC621
PULSE WIDTH MODULATION
PWM MODULATION
TRIANGLE OSC
PROTECTION LATCH
MT UNREG (W501 ⑩, ⑪)
Q626, 627 PWM POWER DRIVE
LPF
MT NUREG (W501 ⑩, ⑪)
VTR DD ON (IC501 ③)
Q624, 625
RV621 FREQENCY
IC510 (1/4)
LPF
CAPSTAN ERROR
Q622, 623 PWM POWER DRIVE
Q629 PROTECTION DETECT
Q621, Q623
SS 5V (W501 ⑬)
Q628 PROTECTION DETECT
IC508
CAPSTAN MOTOR DRIVE
CAP FWD
CAP CW/CCW
CAP ON
POWER OFF
120° LOGIC
HE POWER
VH(+)
SS 5V (W501 ⑬)
MT UNREG (W501 ⑩, ⑪)
CN502
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
HE Vcc
HALL DEVICE
VHE (+), (−)
UHE (+), (−)
WHE (+), (−)

3-9. SYSTEM CONTROL SECTION FUNCTION DESCRIPTION

The system control section consists of the following four microcomputers:

- Mode/mechanism control microcomputer CXP80116
- DDS microcomputer μPD7508BGB
- EVR microcomputer MC68HC05N4FU
- AF microcomputer MC68HC05C4FU

3-9-1. Mode/Mechanism Control Microcomputer CXP80116 (IC501 on CO-2P Board)

1. Function description

1) Power ON/OFF control
2) Key matrix read
   (Playback, record, fast-forward, rewind, pause, stop, data screen)
   * REC key is only provided with model .
3) Reading of other keys
   (Power (camera/off/video), cassette eject)
4) Servos
5) Loading motor control
6) Error detection
   - Battery end/pre-end
   - Tape end
   - No cassette
   - Erasure prevention
   - DEW (condensation)
   - PAUSE release
   - CLOG (jamming)
   - L. motor emergency
   - Drum rotation
   - Drum phase
   - Reel rotation
   - Capstan rotation
   - Drum/capstan start
6) H.M.S. counter
7) JOG VD insertion
8) Execution of various modes

2. Abbreviated specifications

- 8-bit high-speed, highly integrated single chip microcomputer
- A/D converter, 8-bit, 8-channel
- Serial interface
- Time/counter
- Time base timer
- Vector interrupts
- High precision timing pattern generation function (high-speed output)
- PWM/DA gate pulse output, 12-bit, 2-channel
- High precision measurement function (FRC) for servo signals
- Power on reset function
- Sleep and stop functions
- External memory expansion mode, microcomputer mode
- ROM: 16 kbytes
- RAM: 352 kbytes
- Speed: 500 ns
- Process: C MOS
- Operating voltage: 4.5 to 5.5V
- Package: 80-pin flat package

3-9-2. DDS Microcomputer μPD7508BGB (IC651 on DK-2P Board)

1. Function description

1) Internal data communication control
2) Date/time measurement
3) LCD indication
4) Reading of key matrix
   (White balance, electronic shutter, edit search +/–, auto-lock, focus mode, counter reset, zero memory, title, store, color/mode, back light compensation, date/forward, time/set)
   * Title, memory and color/mode keys are only provided with the model.

2. Operation modes

As shown in the table below, the operation mode is determined according to the position of the power switch (camera/off/video) and whether or not there is a main battery.

Mode	Main Battery	Power Switch	Microcomputer Power	Clock Mode	Main Functions
BACK UP	No	Camera/off/video	Lithium battery	500 ms intermittent oscillation	• Backup of title and tape counter data • Clock count operation
	Yes	Off			
VTR ON	Yes	Video	SS 5V (main battery)	Continuous oscillation	• Serial communication with EVR and mode/mechanism control microcomputer • Indication to EVF • Acceptance of zero memory and counter reset keys
CAM ON	Yes	Camera	SS 5V (main battery)	Continuous oscillation	• VTR ON functions + all camera features • Indication control for white balance, focus, titles, electronic shutter, etc.

3-9-3. EVR Microcomputer MC68HC05N4FU (IC601 on CV-9 Board)

1. Function description

1) EVR control
2) Auto white balance control
3) Electronic shutter

3-9-4. AF M

1. Function

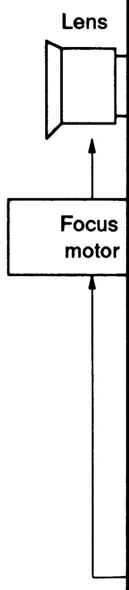
1) AF contro
2) Power fo
3) Zoom mo

2. Auto foc
(Λ -AF:

The high freq
luminance sig
using external

3. Outline

The frequency
2 MHz are ex
digitally integ
the evaluatio
information fo
finding the pe
that:
Picture is in
frequency co
increases



3-9-4. AF Microcomputer MC68HC05C4FU (IC802 on CV-9 Board)

1. Function description

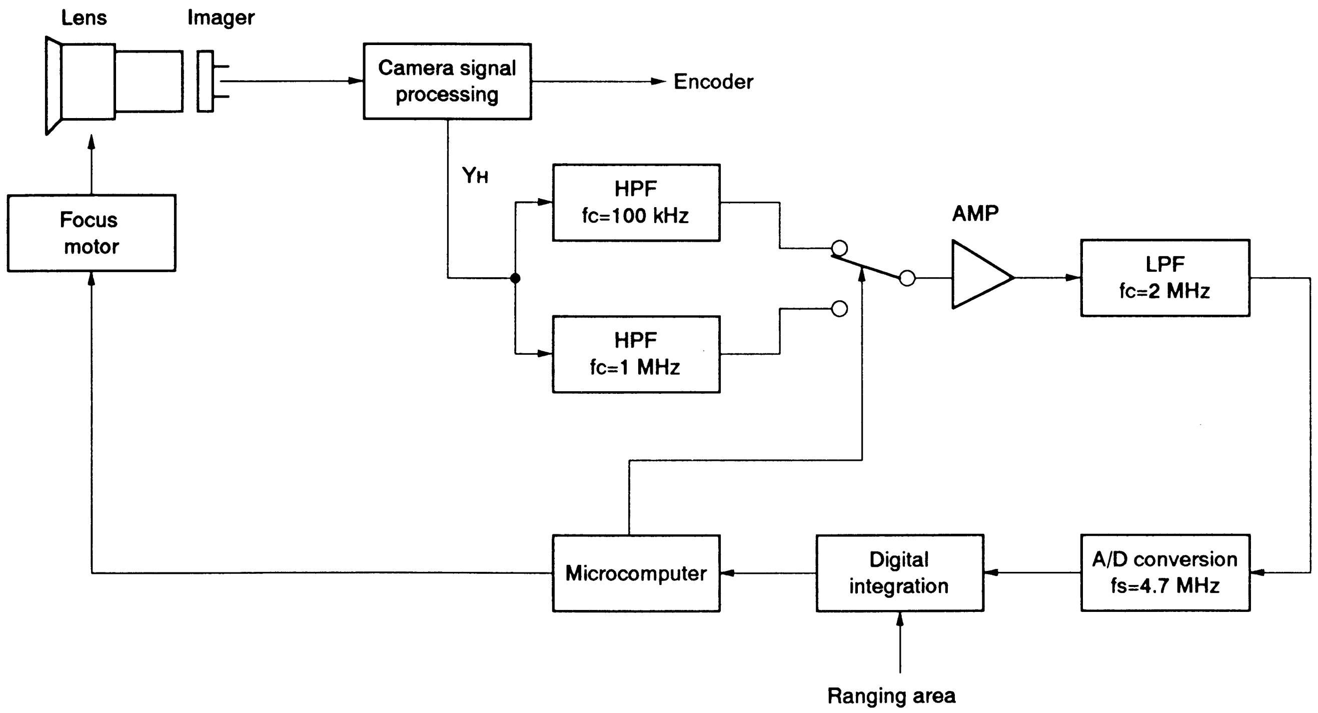
1) AF control
2) Power focus
3) Zoom motor drive

2. Auto focus system of this unit
(Λ -AF: Image processing system)

The high frequency components of the video signal (actually luminance signal)are microcomputer processed by TCL without using external sensors to control the focus.

3. Outline of operation

The frequency components from 100k to 2 MHz and from 1M to 2 MHz are extracted from the luminance signal Y, and these are digitally integrated for each field. This integration value is called the evaluation value. This evaluation value becomes the information for auto focusing, and the focus ring is controlled by finding the peaks in the evaluation values based on the concepts that:
Picture is in focus → edges of image become clearer → high frequency components of image increase → evaluation value increases



3-9-5. Mode/Mechanism Control — Video, Audio Block Interface

Signal	I/O	Pin No.	STOP	FF	REW	CUE	REVIEW	PB	PB・PAUSE	REC	REC・PAUSE
ME/$\overline{\text{MP}}$	O	Pin ⑪ of CN501 on CO-2P board	*1	*1	*1	*1	*1	*1	*1	*1	*1
SP/$\overline{\text{LP}}$	O	Pin ⑦ of IC501 on CO-2P board	*17	*17	*17	*2	*2	*2	*2	*17	*17
JOG	O	Pin ⑧ of IC501 on CO-2P board	L	L	L	H	H	L	H	L	L
VA PB MODE	O	Pin ⑨ of IC501 on CO-2P board	L	L	L	H	H	H	H	L	L
VIDEO CS	O	Pin ⑬ of IC501 on CO-2P board	*3	*3	*3	*3	*3	*3	*3	*3	*3
AUDIO MUTE	O	Pin ⑭ of IC501 on CO-2P board	L	L	L	H	H	L	H	L	L
$\overline{\text{VP SAVE}}$ *16	O	Pin ㉘ of IC501 on CO-2P board	H	H	H	L	L	L	L	L	H
SYNC DET *14	O	Pin ㉙ of IC501 on CO-2P board	*4	*4	*4	*5	*5	*5	*5	*4	*4
COSMO SO	O	Pin ㊳ of IC501 on CO-2P board	*6	*6	*6	*6	*6	*6	*6	*6	*6
$\overline{\text{COSMO SCK}}$	O	Pin ㊴ of IC501 on CO-2P board	*7	*7	*7	*7	*7	*7	*7	*7	*7
CLOG	I	Pin (57) of IC501 on CO-2P board	H	*8	*8	*8	*8	*8	*8	H	H
COMP SYNC	I	Pin (58) of IC501 on CO-2P board	*9	*9	*9	*9	*9	*9	*9	*9	*9
PB SP/$\overline{\text{LP}}$	I	Pin (59) of IC501 on CO-2P board	L	*10	*10	*10	*10	L	L	L	L
CAM/$\overline{\text{LINE}}$	O	Pin (63) of IC501 on CO-2P board	*11	*11	*11	*11	*11	*11	*11	*11	*11
VIDEO MUTE *15	O	Pin (64) of IC501 on CO-2P board	L	L	L	L	L	L	L	L	L
RP PB MODE	O	Pin (77) of IC501 on CO-2P board	L	L	L	H	H	H	H	L	L
$\overline{\text{FE ON}}$	O	Pin (78) of IC501 on CO-2P board	H	H	H	H	H	H	H	L	H
JOG VD	O	Pin (79) of IC501 on CO-2P board	L	L	L	*12	*12	L	*12	L	L
RF SWP	O	Pin (80) of IC501 on CO-2P board	H	*13	*13	*13	*13	*13	*13	*13	*13

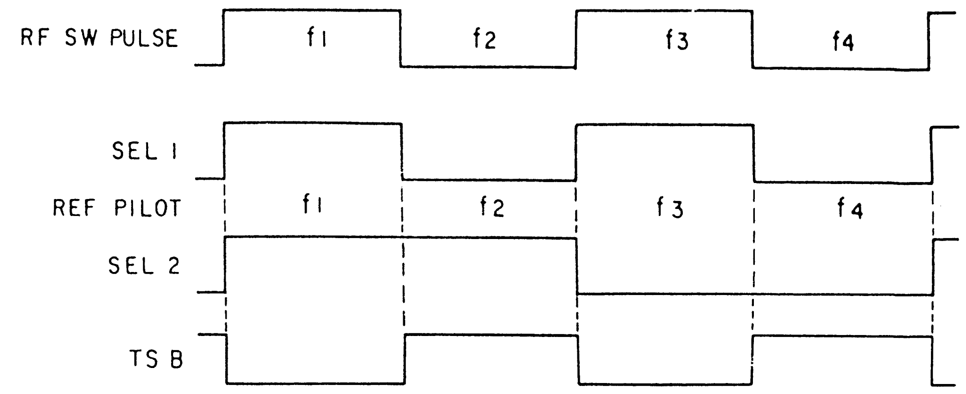
*1. "L" when using MP tape
*2. According to recorded mode of PB tape (SP: "H", LP: "L")
*3. Approx. 20 msec period "L" pulse. Chip select signal to video IC (IC201 and IC203 on CV-9 board)
*4. "H" when video signals are input.
*5. "H" when video signals are played back.
*6. 1V period "L" pulse train
*7. 1V period "L" pulse train
*8. Video head clog: "H", Normally: "L"
*9. Positive polarity composite sync signal
*10. SP mode recorded tape: "H", LP mode recorded tape: "L"
*11. "L" when the power switch is set to VIDEO position and "H" when CAMERA position.
*12. 1V period "H" pulse
*13. 2V period duty 50% pulse
*14. Detects a composite sync signal input at pin (58) of IC501.
*15. "H" when STOP to/from PB mode transition period.
*16. This signal switches a power (on/off) of video circuit IC202 and IC203.
*17. Depends on the SP/LP switch (S510 on the VK-1P board) position (SP: "H", LP: "L")

3-9-6. Mode/Mechanism Control — Servo Peripheral Circuit Interface

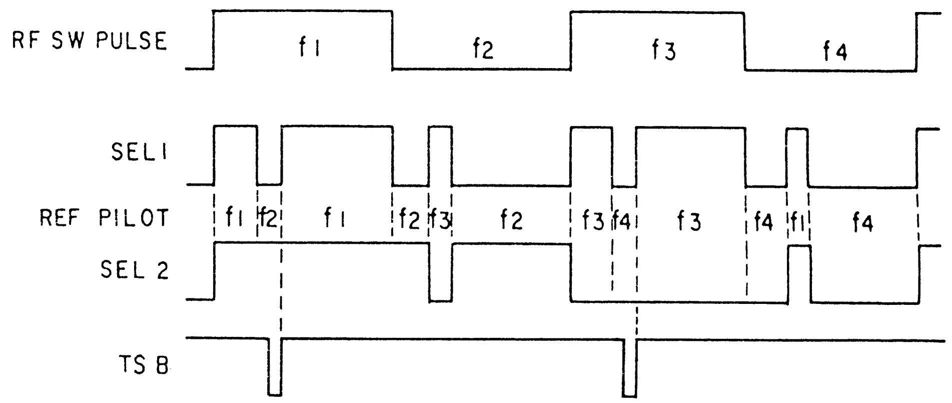
Signal	I/O	Pin No.	EJECTED	THREAD-ING	UN THREAD-ING	STOP	FF	REW	CUE	REVIEW	PB	PB・PAUSE	REC	REC・PAUSE
SEL 2 *17	O	Pin ① of IC501 on CO-2P board	L	L	L	L	H	H	*3	*3	*2	H	*1	H
SEL 1 *17	O	Pin ② of IC501 on CO-2P board	H	H	H	H	H	H	*3	*3	*2	L	*1	H
TS B *18	O	Pin ④ of IC501 on CO-2P board	L	L	L	L	L	L	*3	*3	*2	*16	*1	L
DRUM ON	O	Pin ⑩ of IC501 on CO-2P board	L	H	H	L	H	H	H	H	H	H	H	H
SW POSI ADJ	I	Pin ㊿ of IC501 on CO-2P board	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
ATF ERROR	I	Pin (51) of IC501 on CO-2P board	*6	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
DRUM PG	I	Pins (55) and (60) of IC501 on CO-2P board	L	*8	*8	L	*8	*8	*8	*8	*8	*8	*8	*8
DRUM FG	I	Pin (61) of IC501 on CO-2P board	H	*9	*9	H	*9	*9	*9	*9	*9	*9	*9	*9
CAP FG	I	Pins (62) and (69) of IC501 on CO-2P board	H/L	PULSE	PULSE	H/L	*10	*10	*10	*10	*10	H/L	*10	H/L
CAP D/A	I	Pin (65) of IC501 on CO-2P board	L	*11	*11	L	*11	*11	*11	*11	*11	L	*11	L
DRUM D/A	O	Pin (66) of IC501 on CO-2P board	L	*12	*12	L	*12	*12	*12	*12	*12	*12	*12	*12
CAP PWM	O	Pin (67) of IC501 on CO-2P board	L	*13	*13	L	*13	*13	*13	*13	*13	L	*13	L
DRUM FWD/REV	O	Pin (68) of IC501 on CO-2P board	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14
CAP ON	O	Pin (75) of IC501 on CO-2P board	L	H	H	L	H	H	H	H	H	L	H	L
CAP FWD/$\overline{\text{RVS}}$	O	Pin (76) of IC501 on CO-2P board	L	L	H	L	H	L	H	L	H	L	H	L
RF SWP	O	Pin (80) of IC501 on CO-2P board	H	*15	*15	H	*15	*15	*15	*15	*15	*15	*15	*15

*1. See timing chart 1.
*2. See timing chart 2.
*3. See timing chart 3.
*4. 1V period "H" pulse
*5. DC voltage set with RV501 (Switching position adjustment)
*6. Approx. 2.3 Vdc constant
*7. ATF error voltage
*8. 2V period "H" pulse
*9. 1.7 msec period pulse
*10. Pulses of frequecy in proportion to tape speed
*11. "H" pulse output when rising or falling edges of the capstan, Normaly: "HIZ"
*12. 6 msec period PWM signal (tri-state) of "H", "L" and "HIZ" (2.5 Vdc)
*13. 64 μsec period PWM signal
*14. Normally: "H"
*15. 2V period duty 50% pulse
*16. V period "L" pulse
*17. ATF REF PILOT signal frequency (f1 to f4) selecting signal
*18. ATF AGC timing control signal

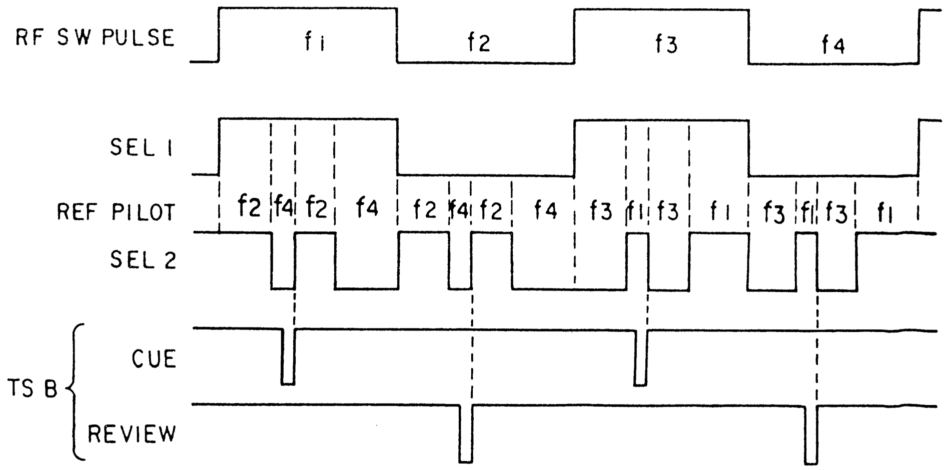
Timing chart 1 (REC)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f1
f2
f3
f4
SEL 2
TS B

Timinfg chart 2 (PB)


RF SW PULSE
f1
f2
f3
f4
SEL I
REF PILOT
f1
f2
f1
f2
f3
f2
f3
f4
f3
f4
f1
f4
SEL 2
TS B

Timing chart 3 (CUE/REVIEW)


RF SW PULSE
f1
f2
f3
f4
SEL I
REF PILOT
f2
f4
f2
f4
f2
f4
f2
f4
f3
f1
f3
f1
f3
f1
f3
f1
SEL 2
TS B
CUE
REVIEW

3-9-7. Mode/Mechanism Control — Mode/Mechanism Control Peripheral Circuit Interface

Signal	I/O	Pin No.	I/O Level
VTR DD ON	O	Pin ③ of IC501 on CO-2P board	VTR DC/DC converter on/off signal "H" when power of video or camera is turned on.
CAM DD ON	O	Pin ⑤ of IC501 on CO-2P board	Camera DC/DC converter on/off signal "H" when power of camera is turned on.
DATA SCREEN	O	Pin ⑥ of IC501 on CO-2P board	"H" when data screen is turned on.
SP/$\overline{\text{LP}}$	O	Pin ⑦ of IC501 on CO-2P board	"H" during SP recording mode or playback of tape recorded in SP mode
$\overline{\text{SYS RESET}}$	O	Pin ⑫ of IC501 on CO-2P board	Reset signal of AF microcomputer (IC802 on the CV-9 board) Normally: "H" ("L" pulse when power of video or camera is turned on.)
$\overline{\text{M IN 3}}$	I	Pin ⑮ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 2}}$	I	Pin ⑯ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 1}}$	I	Pin ⑰ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 0}}$	I	Pin ⑱ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
T/E LED	O	Pin ⑲ of IC501 on CO-2P board	Tape top/end LED lighting control signal STOP/PB/REC/PB·PAUSE/REC·PAUSE/REVIEW: 170 msec period "H" pulse, CUE: 22 msec period "H" pulse, FF/REW: 4 msec period "H" pulse, EJECT or CASSETTE IN detecting: 22 msec period "H" pulse
LM UNLD	O	Pin ⑳ of IC501 on CO-2P board	Normally: "L" ("H" in Unthreading, "H" pulse is output in Mechanical mode transition)
LM LD	O	Pin ㉑ of IC501 on CO-2P board	Normally: "L" ("H" in Threading, "H" pulse is output in Mechanical mode transition)
M OUT 4	O	Pin ㉒ of IC501 on CO-2P board	Key matrix output signal 20 msec period "H" pulse
M OUT 3	O	Pin ㉓ of IC501 on CO-2P board	Key matrix output signal 20 msec period "H" pulse
$\overline{\text{M OUT 2}}$	O	Pin ㉔ of IC501 on CO-2P board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{M OUT 1}}$	O	Pin ㉕ of IC501 on CO-2P board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{M OUT 0}}$	O	Pin ㉖ of IC501 on CO-2P board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{TALLY}}$	O	Pin ㉗ of IC501 on CO-2P board	TALLY LED control signal. Normally: "H" ("L" during REC mode when power switch is set to CAMERA position)
$\overline{\text{RESET}}$	I	Pin ㉜ of IC501 on CO-2P board	Normally: "H" (Reset: "L")
$\overline{\text{COSMO CS}}$	I	Pin ㊱ of IC501 on CO-2P board	1V period "L" pulse (18 msec period in VTR mode)
COSMO SI	I	Pin ㊲ of IC501 on CO-2P board	1V period "H" pulse train (18 msec period in VTR mode)
COSMO SO	O	Pin ㊳ of IC501 on CO-2P board	1V period "L" pulse train (18 msec period in VTR mode)
$\overline{\text{COSMO SCK}}$	I/O	Pin ㊴ of IC501 on CO-2P board	1V period "L" pulse train (18 msec period in VTR mode)
$\overline{\text{CAM P SW}}$	I	Pin ㊵ of IC501 on CO-2P board	"L" when power switch (S501 on the VK-1P board) is set to CAMERA position and standby switch (S951 on the RC-26P board) to STANDBY position.
$\overline{\text{M IN 5}}$	I	Pin ㊷ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 4}}$	I	Pin ㊸ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{START/STOP}}$	O	Pin ㊹ of IC501 on CO-2P board	Normally: "H" ("L" when start/stop button (S952 on the RC-26P board or S451 on the MA-31P board) is pressed.)
$\overline{\text{EJECT}}$	I	Pin ㊺ of IC501 on CO-2P board	Normally: "H" ("L" when EJECT switch (S508 on VK-1P board) is pressed.)
$\overline{\text{LINCS}}$	I	Pin ㊻ of IC501 on CO-2P board	Normally: "H" ("L" pulse when power button of the remote controller is turned on.)
$\overline{\text{DEW}}$	I	Pin ㊼ of IC501 on CO-2P board	Normally: "H" ("L" when dew)
BATT DOWN	I	Pin ㊽ of IC501 on CO-2P board	Main battery voltage (CAM UNREG) is divided by RV551 (battery down adjustment) and input. For detecting battery end/pre-end.
STILL ADJ	I	Pin ㊾ of IC501 on CO-2P board	DC voltage set by RV552 (STILL adjustment) on the CV-9 board is input.
CLOG	I	Pin (57) of IC501 on CO-2P board	Normal playback: "L" ("H" when PB RF signal is not reproduced due to head clog, etc..
PB SP/$\overline{\text{LP}}$	I	Pin (59) of IC501 on CO-2P board	Recording speed mode detection signal in FF, REW, CUE or REVIEW mode ("H" in SP mode, "L" in LP mode)
$\overline{\text{VTR P SW}}$	I	Pin (70) of IC501 on CO-2P board	"Normally: "H" ("L" when power switch (S501 on the VK-1P board) is set to video position.)

3-9-8. Mode/Mechanism Control — Mechanism Block Interface

<table>
<tr><th>Signal</th><th>I/O</th><th>Pin No.</th><th>I/O Level</th></tr>
<tr><td>S REEL FG</td><td>I</td><td>Pin ③ of CN001 on CC-15P board</td><td>Pulse (Approx. 4 Vp-p) that is generated by S-reel rotation.
It is approx. 1 sec period in REC/PB (SP) mode.</td></tr>
<tr><td>MODE SW 2</td><td>I</td><td>Pin ④ of CN001 on CC-15P board</td><td rowspan="4">Pins are connected to mode switch for mechanical position detection.
<table>
<tr><th></th><th>EJECTED</th><th>THREADING UNTHREADING</th><th>STOP</th><th>REC/PB/FF/ REW/CUE/ REVIEW/PAUSE</th></tr>
<tr><td>MODE SW 2 (④−⑦)</td><td>○</td><td>○</td><td>×</td><td>○</td></tr>
<tr><td>MODE SW 1 (⑤−⑦)</td><td>×</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>MODE SW 0 (⑥−⑦)</td><td>×</td><td>×</td><td>○</td><td>○</td></tr>
</table>
×……Open
○……Short</td></tr>
<tr><td>MODE SW 1</td><td>I</td><td>Pin ⑤ of CN001 on CC-15P board</td></tr>
<tr><td>MODE SW 0</td><td>I</td><td>Pin ⑥ of CN001 on CC-15P board</td></tr>
<tr><td>$\overline{\text{M OUT 0}}$ (COM)</td><td>O</td><td>Pin ⑦ of CN001 on CC-15P board</td></tr>
<tr><td>CC DOWN</td><td>I</td><td>Pin ⑧ of CN001 on CC-15P board</td><td rowspan="2">It is connected to cassette compartment down detection (CC DOWN) switch.
When cassette compartment comes down, connection between Pins ⑧ and ⑦ are short-circuited.
When cassette compartment comes up, connection between Pins ⑧ and ⑦ is open.</td></tr>
<tr><td>$\overline{\text{MOUT 0}}$ (COM)</td><td>O</td><td>Pin ⑦ of CN001 on CC-15P board</td></tr>
<tr><td>END SENS</td><td>I</td><td>Pin ⑩ of CN001 on CC-15P board</td><td>Normally: “L” (“H” pulse is output in tape end or cassette unloaded)</td></tr>
<tr><td>13/10</td><td>I</td><td>Pin ⑪ of CN001 on CC-15P board</td><td>Not used</td></tr>
<tr><td>TOP END LED</td><td>O</td><td>Pin ⑤ of CN002 on CC-15P board</td><td>“L” pulse (approx. 1 Vp-p)
(pulse period is changed from 12 to 170 msec according to operation mode.)</td></tr>
<tr><td>TOP SENS</td><td>I</td><td>Pin ⑦ of CN002 on CC-15P board</td><td>Normally: “L” (“H” pulse is output in tape top or cassette unloaded)</td></tr>
<tr><td>ME/$\overline{\text{MP}}$</td><td>I</td><td>Pin ② of CN002 on CC-15P board</td><td>“L” in MP tape (“H” pulse (20 msec period) in cassette unloaded)</td></tr>
<tr><td>REC PROOF</td><td>I</td><td>Pin ④ of CN002 on CC-15P board</td><td>“L” when recording possible cassette is loaded.
“H” pulse (20 msec period) is output, when recording inhibiting cassette is loaded.</td></tr>
<tr><td>T REEL FG</td><td>I</td><td>Pin ⑨ of CN002 on CC-15P board</td><td>Pulse (Approx. 4 Vp-p) that is generated by T-reel rotation, in REC/PB (SP) mode, it is approx. 1 sec period.</td></tr>
</table>

3-9-9. DDS Microcomputer (IC651 on CK-8P Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	CMI 0	I	Key matrix input signal. Normally “H”. When key input, “L” pulse for 18 ms (VTR mode) or 1V period (camera mode).
2	CMI 1	I	
3	CMI 2	I	
4	CMI 3	I	
5	$\overline{\text{CMO 0}}$	O	Key matrix output signal. “L” pulse for 18 ms (VTR mode) or 1V period (camera mode).
6	$\overline{\text{CMO 1}}$	O	
7	$\overline{\text{CMO 2}}$	O	
8	$\overline{\text{CMO 3}}$	O	
15	RESET	I	Normally “L”.
16	CL 1	I	System clock oscillation pin. • Video power ON or camera power ON Continuous oscillation (oscillation frequency approx. 320 kHz) • Power OFF or backed up by lithium battery 500 ms intermittent oscillation (oscillation frequency approx. 70 kHz)
18	CL 2	O	
19	INT 1	I	Interrupt input by camera VD. VTR mode: “H” Camera mode: 1V period “H” pulse
21	$\overline{\text{DDS SCK}}$	I/O	Serial communication·serial clock I/O. V period “L” pulse train.
22	DDS SO	O	Serial communication·data output. V period “H” pulse train.
24	DDS SI	I	Serial communication·data input. V period “L” pulse train.
25	CG BUSY	I	Busy signal input from character generator. V period “H” pulse train.
26	VTR PWR	I	SS 5V power detection. “H” while power ON.
27	LI PE	I	Lithium battery pre-end detection. Normally “H”. “L” when lithium battery voltage drops.
28	$\overline{\text{TEST}}$	I	Test mode input. Normally “H”.
29	CG STB	O	Strobe signal for character generator. 1V period “H” pulse train.
30	$\overline{\text{COSMO CS}}$	O	Chip select signal to servo/system control microcomputer (IC501 on CO-2P board). 1V period “L” pulse.
31	$\overline{\text{EVR CS}}$	O	Chip select signal to EVR microcomputer (IC601 on CV-9 board). 1V period “L” pulse.
32	CMO 4	O	Key matrix output signal. “H” pulse for 18 ms (VTR mode) or 1V period (camera mode).
34	TITLE CS	O	Chip select signal to title controller (IC902 on LI-10 board). VTR mode: “L” Camera mode: 1V period “H” pulse.
35	SRAM CS	O	Chip select signal to static RAM (IC903 on LI-10 board). VTR mode: “L” Camera mode: Normally “L”. “H” during title operation.
36	TG STB	O	Strobe signal to timing generator (CV-9 board, DT-73 board). Camera mode: 1V period “H” pulse. VTR mode: “L”
38	X1		Crystal oscillation circuit for clock. Oscillation frequency of 32.768 kHz.
39	X2		

3-9-10. EVR Microcomputer (IC601 on CV-9 Board) — Peripheral Circuit Interface

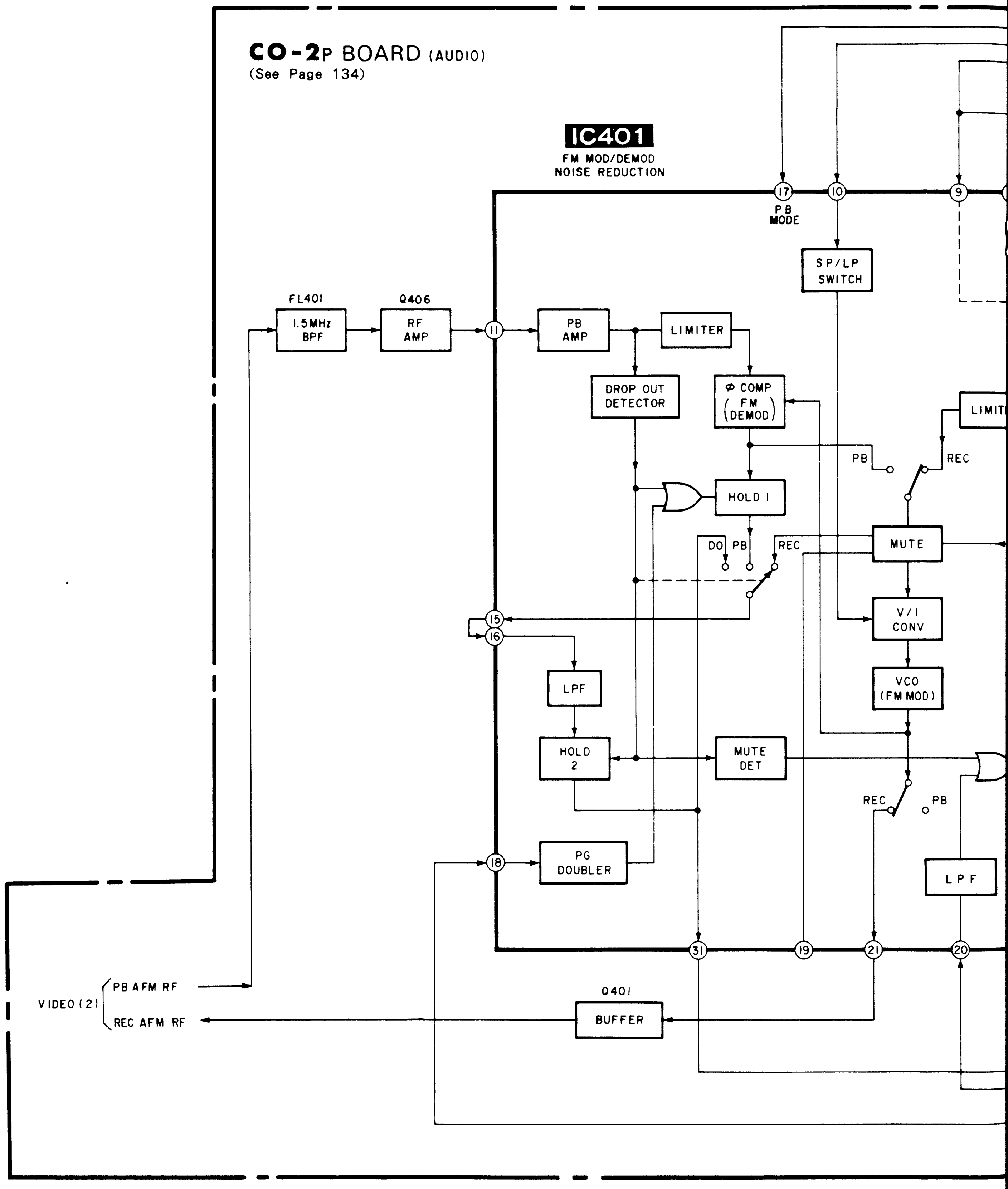
PIN No.	Signal Name	I/O	Function and I/O Level
1	–		–
2	DA SSW	O	"H" only during communication with serial switching D/A converter. V period "H" pulse.
3	$\overline{\text{EVR SCLK}}$	O	Serial clock output. V period "L" pulse train.
4	EVR SI	I	Serial data input. V period "H" pulse train.
5	EVR SO	O	Serial data output. V period "L" pulse train.
6	$\overline{\text{EVR CS}}$	I	Communication request from DDS. V period "L" pulse.
7	L IN	I	LINCS input. L: 0, H: 1. V period "H" pulse train.
8	L OUT	O	LINCS output. L: 0, H: 1. V period "H" pulse train.
9	$\overline{\text{CAM ADJ}}$	I	Normal/Adjust selection. Normally "H". "L" during adjustment.
10	NC	–	NC
11	DDS SSW	O	DDS serial selection. V period "L" pulse.
12, 13	LD	O	Data load instruction to EVR (IC608, IC609). V period "H" pulse.
14	BL	–	"L" for back light compensation ON.
15	IN/OUT	I	Indoors/outdoors mode discrimination input. "H": indoors, "L": outdoors.
16	–		
17	Vpp		EEPROM write voltage supply: connected to GND.
18			GND
19	–	–	
20	PAL/$\overline{\text{NTSC}}$	I	Broadcast system selection. L: NTSC, H: PAL.
21	GND		–
22	GND		–
23	GND		–
24, 25	GND		–
26	GND	–	–
27	GND	–	–
28	CAM 5V	I	Camera power on monitoring. L: CAM OFF, H: CAM ON.
29	AW IN	I	AWB A/D timer stop. Pattern drive interrupt. Normally 2V period pulse.
30	AW ADJ	O	AWB preset data fetch. Normally "L". "H" during auto white balance adjustment.
31	–	–	NC
32	DPCS	–	–
33	–	–	–
34	S3SW	O	AWB measurement signal selection. 3V period "H" pulse.
35	S2SW	O	AWB measurement signal selection. 3V period "H" pulse.
36	DISCHG	O	Capacitor reset pulse for timer measurement lamp voltage generation. V period "H" pulse.
37	–	–	–
38	S1SW	O	AWB measurement signal selection. 3V period "H" pulse.
39	–	–	–
40	OSC2	O	Built-in inverter output for oscillation. Oscillation frequency: 4 MHz.
41	OSC1	I	Built-in inverter input for oscillation.
42	VDD		Connected to EVER 5V.
43	–		–
44	$\overline{\text{RESET}}$		Normally "H". "L" when reset.
45	$\overline{\text{IRQ}}$		Connected to $\overline{\text{EVR CS}}$ signal. V period "L" pulse.
46	–	–	EVER 5V
47	–	–	EVER 5V
48	$\overline{\text{A/D EN}}$	O	1-bit A/D converter operation ON/OFF output for titler. Normally "H". "L" for 7V period when title store button (S657 on CK-8P board: model only) pressed.

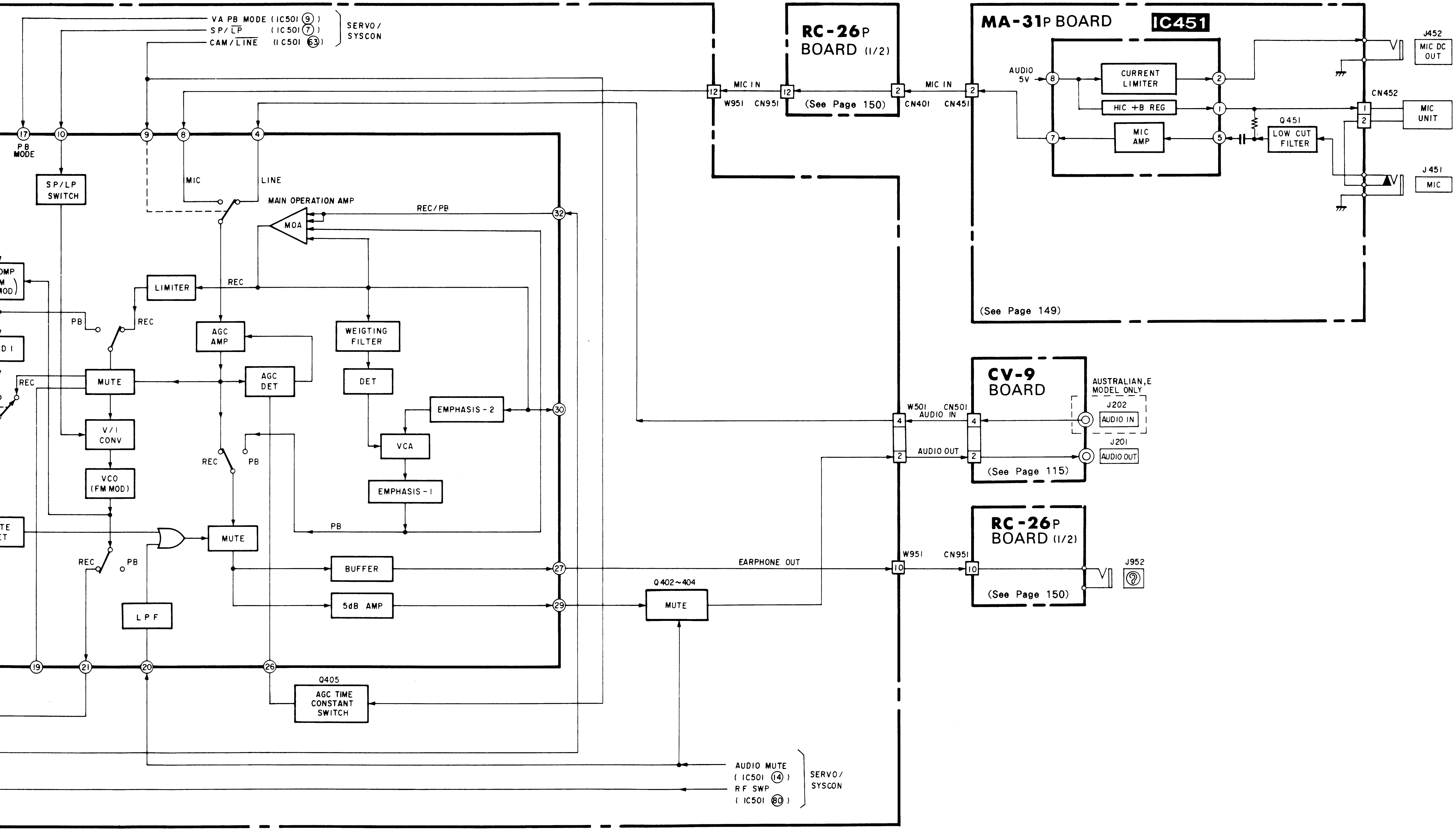
3-9-11. AF Microcomputer (IC802 on CV-9 Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	$\overline{\text{SS}}$ OUT	O	EVR data read timing output (PD5 SS input). V period "L" pulse train.
2	IRIS IN/$\overline{\text{OUT}}$	O	Indoors/outdoors determination according to aperture value. "H" for indoors and "L" for outdoors.
3			
4			
5			
6	$\overline{\text{LOW CONTRAST}}$	O	Signal to DDS microcomputer (IC651 on CK-8 board). "L" when subject has low contrast.
7	–	–	
8			Not used.
9	–	–	
10	–	–	
11	$\overline{\text{ZOOM T}}$	O	Normally "H". "L" when zoom motor is rotated in telephoto direction by remote control.
12	$\overline{\text{ZOOM W}}$	O	Normally "H". "L" when zoom motor is rotated in wide angle direction by remote control.
13	Focus N	O	Normally "L". "H" when focus motor is rotated in close range direction.
14	–	–	
15	Focus ∞	O	Normally "L". "H" when focus motor is rotated in far range direction.
16	F SPD ϕ	O	Bit 0 (LSB) of focus motor speed control signal.
17	–	–	
18	F SPD1	O	Bit 1 of focus motor speed control signal.
19	F SPD2	O	Bit 2 of focus motor speed control signal.
20	–	–	
21	F SPD3	O	Bit 3 (MSB) of focus motor speed control signal.
22	–	–	
23	Vss	–	Connected to GND.
24	Vss	–	Connected to GND.
25	–	–	
26	$\overline{\text{Focus N}}$	I	"L" when focus ring is at close range edge.
27	–	–	
28	–	–	
29	–	–	
30	$\overline{\text{FOCUS }\infty}$	O	"L" when focus ring is at far range edge.
31	AF SSW	O	Timing output for bus selection. V period "H" pulse.
32	–	–	
33	DA STB	O	For AF D/A converter data latch. V period "H" pulse train.
34	PAL/$\overline{\text{NTSC}}$	I	NTSC/PAL selection.
35	–	–	
36	$\overline{\text{J STB}}$	O	For external display jig data latch. V period 'L" pulse.
37	XCS	O	Active "L" for communication request to IC801 CXD-1204. V period "L" pulse.
38	TEST	–	Connected to VDD.
39	–	–	
40	MODE		Connected to VDD.
41	MISO	I/O	SPI Master: in, Slave: out. V period "H" pulse train.
42	MOSI	I/O	SPI Master: out, Slave: in. V period "L" pulse train.
43	$\overline{\text{SCK}}$	I/O	SPI serial clock. V period "L" pulse train.
44	–	–	
45	$\overline{\text{SS}}$	I	V period "L" pulse train.
46	–	–	

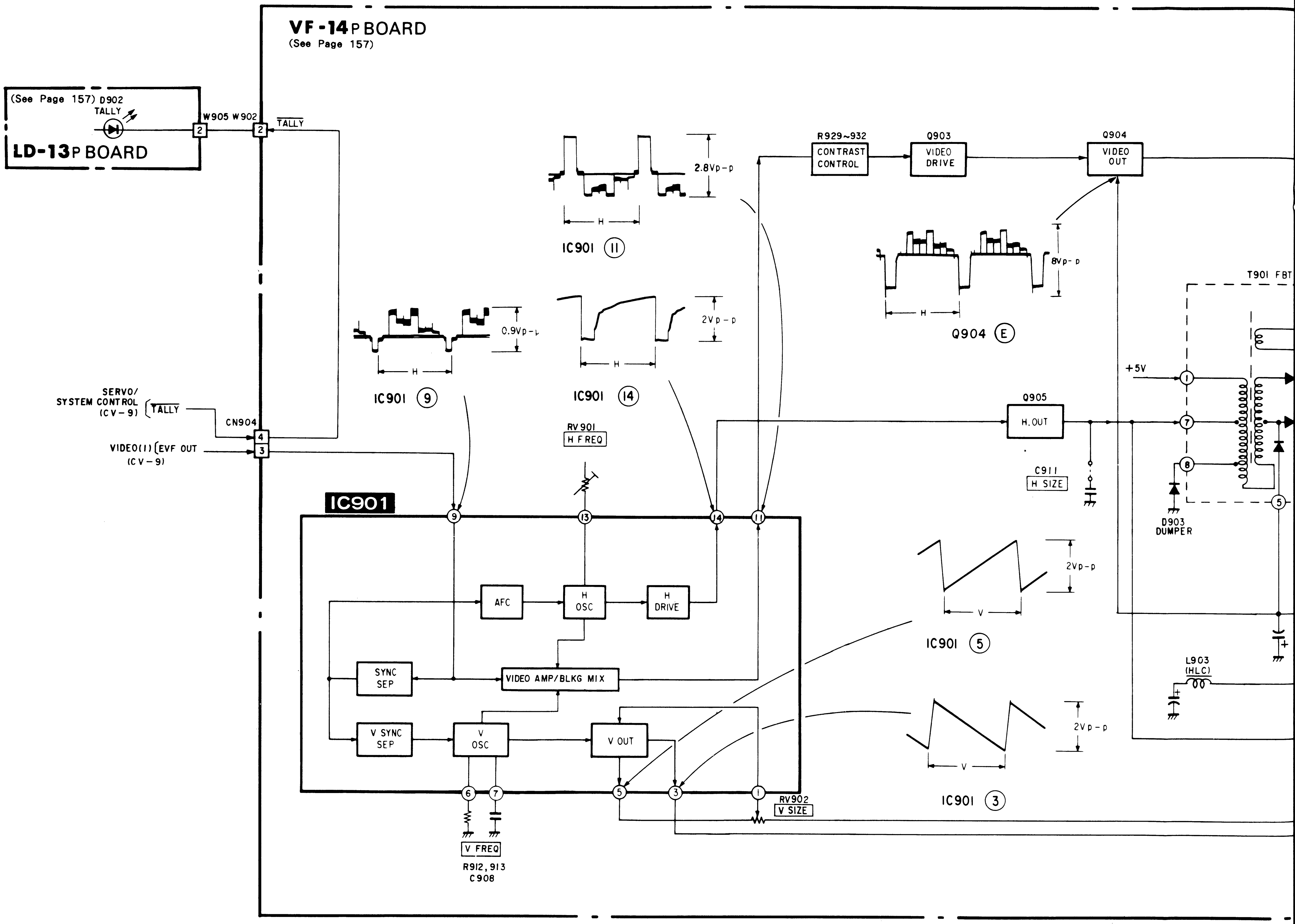
PIN No.	Signal Name	I/O	Function and I/O Level
48	$\overline{\text{EVR CS}}$	I	"L" for EVR data communication request from DDS microcomputer. V period "L" pulse.
49	–	–	
50	–	–	
51	$\overline{\text{Focus FG}}$	I	Interrupt generation at falling edge of focus motor FG. "H" when auto focus OFF. When auto focus ON, "L" pulse with period according to rotational speed of focus motor.
52	CLK OUT	O	Waveform shaped output of Pin (54) clock. (1.79 MHz)
53	–	–	
54	CLK IN	I	External clock input. 14.3 MHz clock input to Pin ㉘ of IC801 is divided to 1/8 and input.
55	VDD		CAM 4.9V
56	–	–	
57	–	–	
58	–	–	
59	–	–	
60	$\overline{\text{SYS RST}}$	I	Normally "H". "L" when reset.
61	AREA	I	Interrupt generation at falling edge from CXD-1204 (IC801). V period pulse.
62	Vpp		CAM 4.9V
63	WND W/$\overline{\text{N}}$	I	Auto focus range area selection. Connected to VDD by 100 kΩ (fixed at wide range side).
64	–	–	

3-10. AUDIO BLOCK DIAGRAM


CO-2P BOARD (AUDIO)
(See Page 134)
IC401
FM MOD/DEMOD
NOISE REDUCTION
17
10
9
PB MODE
SP/LP SWITCH
FL401
1.5MHz BPF
Q406
RF AMP
11
PB AMP
LIMITER
DROP OUT DETECTOR
φ COMP (FM DEMOD)
LIMIT
PB
REC
HOLD I
DO
PB
REC
MUTE
15
16
V/I CONV
LPF
VCO (FM MOD)
HOLD 2
MUTE DET
REC
PB
18
PG DOUBLER
LPF
31
19
21
20
Q401
BUFFER
VIDEO (2)
PB AFM RF
REC AFM RF


VA PB MODE (IC501 ⑨)
SP/LP (IC501 ⑦)
CAM/LINE (IC501 63)
SERVO/SYSCON
PB MODE
⑰
⑩
⑨
⑧
④
SP/LP SWITCH
MIC
LINE
MAIN OPERATION AMP
MOA
REC/PB
㉜
OMP
M
MOD
LIMITER
REC
PB
REC
AGC AMP
WEIGTING FILTER
D I
REC
MUTE
AGC DET
DET
EMPHASIS - 2
㉚
V/I CONV
VCA
REC
PB
VCO (FM MOD)
EMPHASIS - I
TE
ET
PB
MUTE
REC
PB
BUFFER
㉗
5dB AMP
㉙
LPF
⑲
㉑
⑳
㉖
Q405
AGC TIME CONSTANT SWITCH
Q402~404
MUTE
EARPHONE OUT
AUDIO MUTE (IC501 ⑭)
RF SWP (IC501 80)
SERVO/SYSCON
MIC IN
12
W951
CN951
RC-26P BOARD (1/2)
12
2
(See Page 150)
MIC IN
CN401
CN451
2
MA-31P BOARD
IC451
AUDIO 5V
⑧
CURRENT LIMITER
②
HIC +B REG
①
MIC AMP
⑦
⑤
Q451
LOW CUT FILTER
CN452
1
2
J452
MIC DC OUT
MIC UNIT
J451
MIC
(See Page 149)
CV-9 BOARD
W501
CN501
AUDIO IN
4
4
AUSTRALIAN,E MODEL ONLY
J202
AUDIO IN
J201
AUDIO OUT
2
2
(See Page 115)
RC-26P BOARD (1/2)
W951
CN951
10
10
J952
(See Page 150)

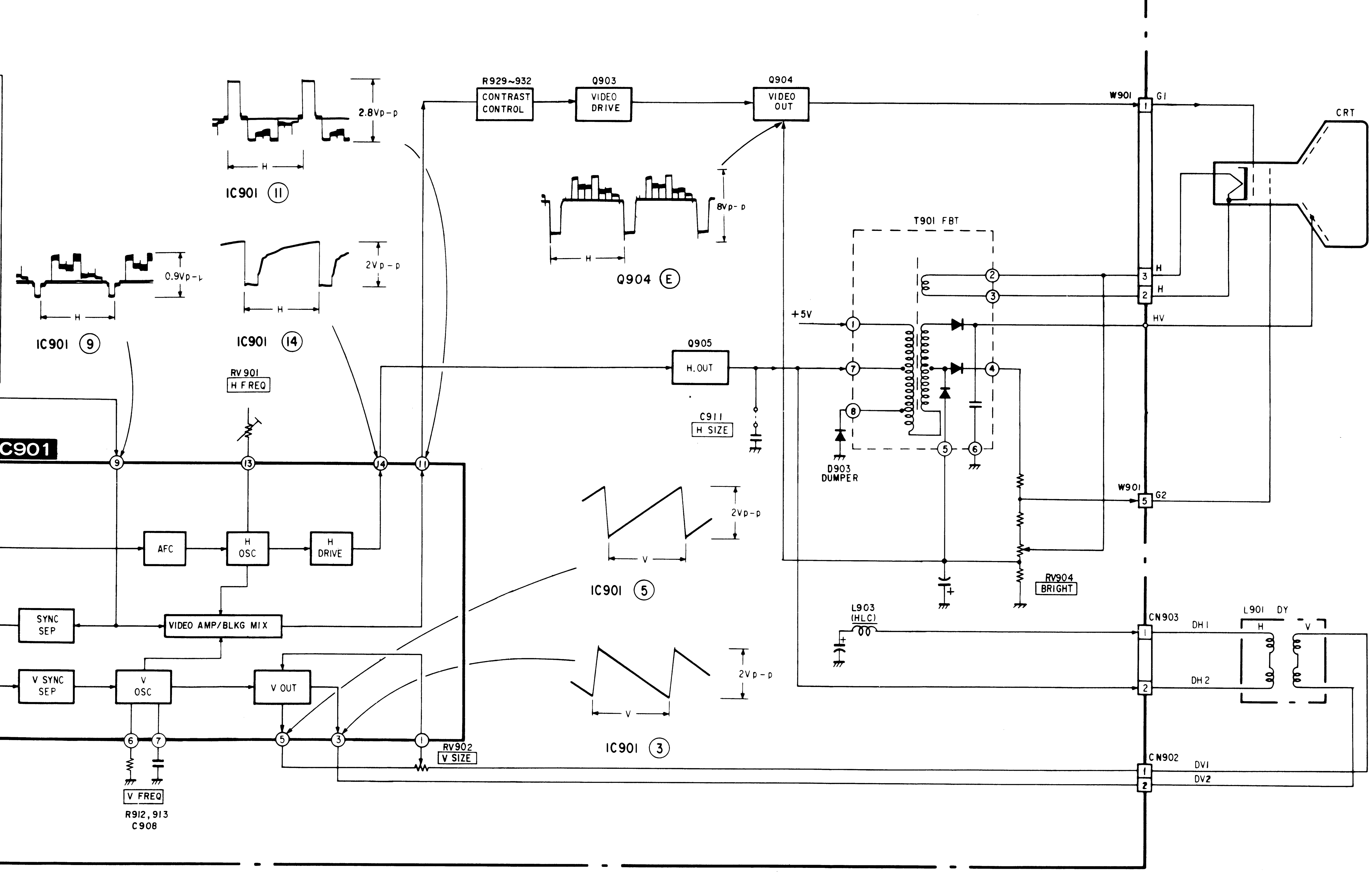
3-11. VIEW FINDER BLOCK DIAGRAM



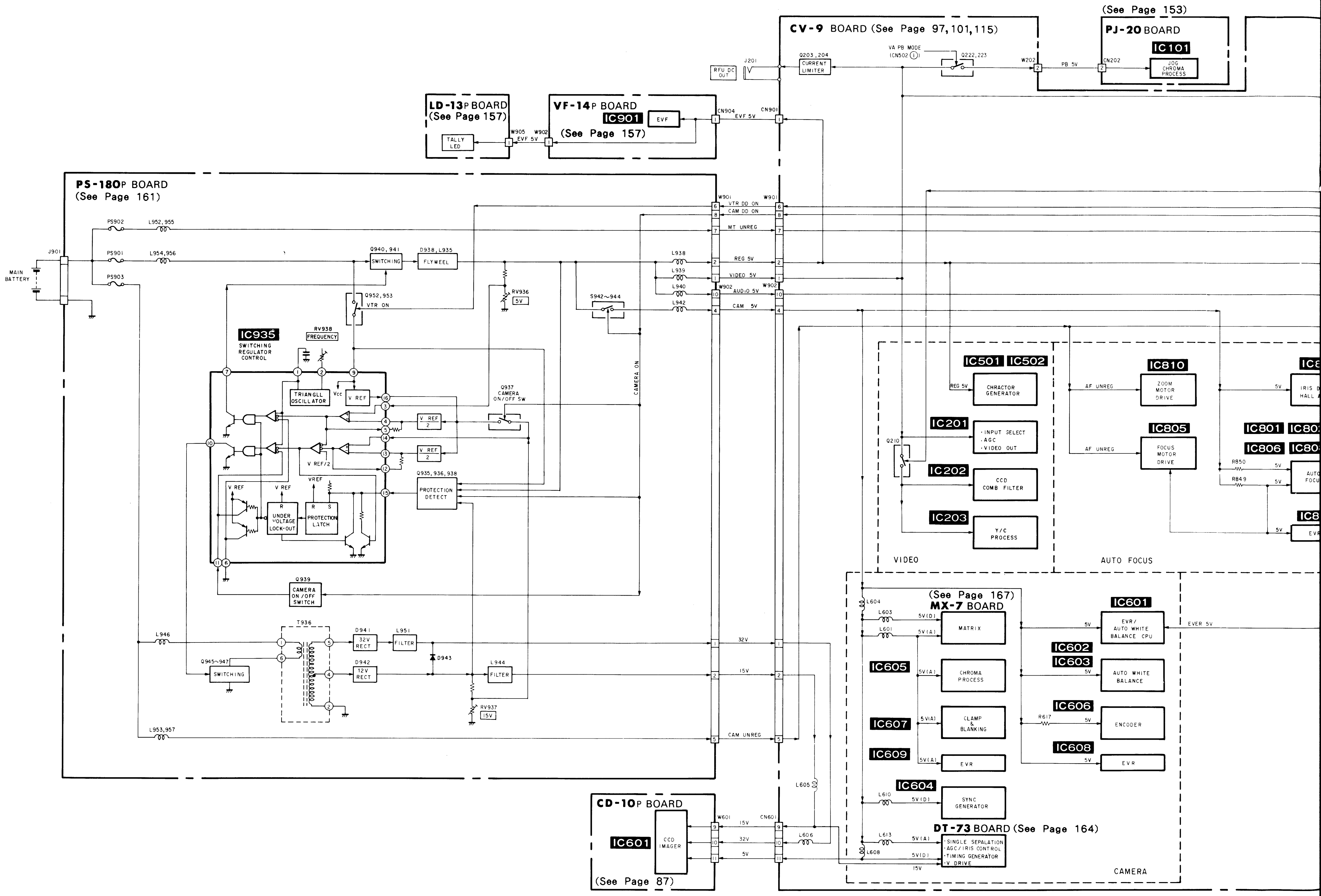
VF-14P BOARD
(See Page 157)
(See Page 157) D902
TALLY
LD-13P BOARD
W905 W902
2
2
TALLY
SERVO/
SYSTEM CONTROL
(CV-9)
TALLY
CN904
4
3
VIDEO(1) EVF OUT
(CV-9)
IC901
0.9Vp-p
H
IC901 ⑨
2.8Vp-p
H
IC901 ⑪
2Vp-p
H
IC901 ⑭
RV901
H FREQ
R929~932
CONTRAST
CONTROL
Q903
VIDEO
DRIVE
Q904
VIDEO
OUT
8Vp-p
H
Q904 Ⓔ
T901 FBT
+5V
Q905
H.OUT
C911
H SIZE
D903
DUMPER
AFC
H
OSC
H
DRIVE
SYNC
SEP
VIDEO AMP/BLKG MIX
V SYNC
SEP
V
OSC
V OUT
2Vp-p
V
IC901 ⑤
2Vp-p
V
IC901 ③
L903
(HLC)
RV902
V SIZE
V FREQ
R912, 913
C908

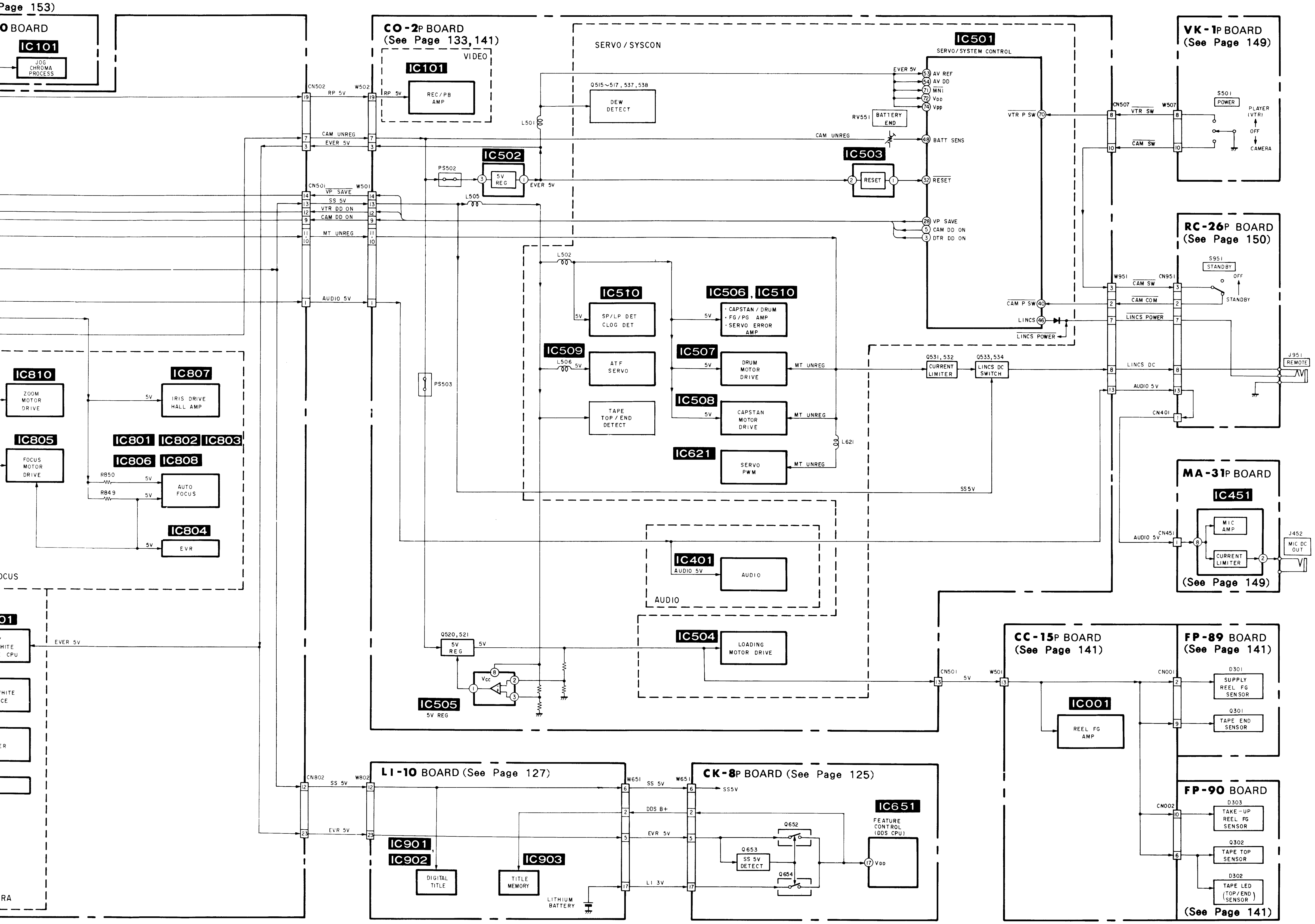
4 P BOARD

e 157)


IC901 ⑪
2.8Vp-p
H
IC901 ⑨
0.9Vp-p
IC901 ⑭
2Vp-p
R929~932
CONTRAST CONTROL
Q903
VIDEO DRIVE
Q904
VIDEO OUT
8Vp-p
Q904 Ⓔ
W901
G1
CRT
T901 FBT
H
HV
+5V
Q905
H.OUT
C911
H SIZE
D903
DUMPER
RV901
H FREQ
C901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
V FREQ
R912, 913
C908
RV902
V SIZE
2Vp-p
V
IC901 ⑤
IC901 ③
W901
G2
RV904
BRIGHT
L903
(HLC)
CN903
DH1
DH2
L901 DY
H
V
CN902
DV1
DV2

3-12. POWER BLOCK DIAGRAM

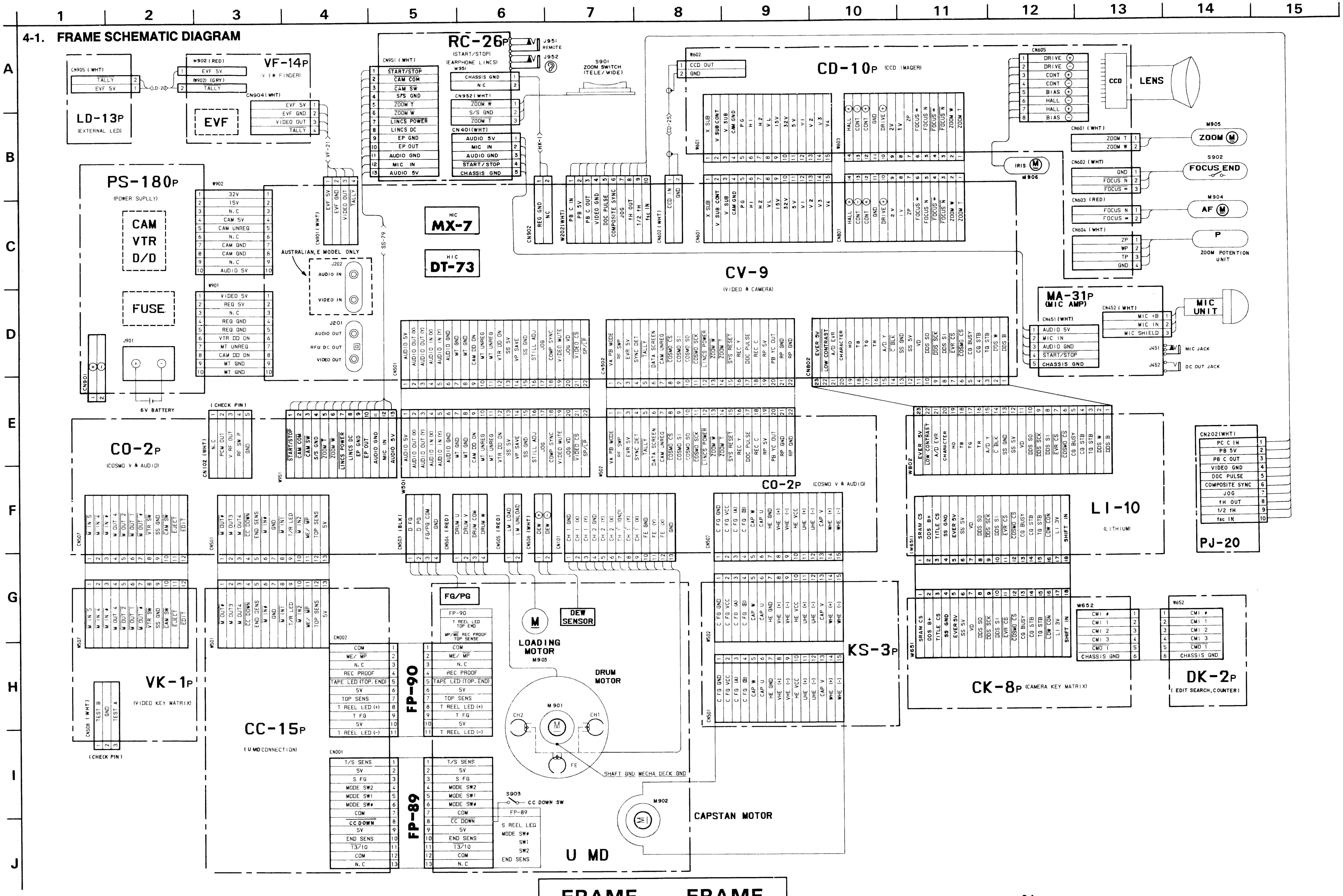

CV-9 BOARD (See Page 97,101,115)
(See Page 153)
PJ-20 BOARD
IC101
JOG CHROMA PROCESS
CN202
PB 5V
W202
Q203,204 CURRENT LIMITER
VA PB MODE (CN502 ①)
Q222,223
RFU DC OUT
J201
LD-13P BOARD (See Page 157)
TALLY LED
W905
W902
EVF 5V
VF-14P BOARD
IC901
EVF
(See Page 157)
CN904
CN901
PS-180P BOARD (See Page 161)
J901
MAIN BATTERY
PS902
PS901
PS903
L952,955
L954,956
Q940,941 SWITCHING
D938,L935 FLYWEEL
Q952,953 VTR ON
RV936 5V
S942~944
IC935
SWITCHING REGULATOR CONTROL
RV938 FREQUENCY
TRIANGLL OSCILLATOR
Vcc
V REF
V REF 2
V REF/2
VREF
UNDER VOLTAGE LOCK-OUT
PROTECTION LATCH
Q937 CAMERA ON/OFF SW
Q935,936,938 PROTECTION DETECT
CAMERA ON
Q939 CAMERA ON/OFF SWITCH
L946
T936
Q945~947 SWITCHING
D941 32V RECT
D942 12V RECT
L951 FILTER
D943
L944 FILTER
RV937 15V
L953,957
L938
L939
L940
L942
W901
VTR DD ON
CAM DD ON
MT UNREG
REG 5V
VIDEO 5V
AUDIO 5V
W902
CAM 5V
32V
15V
CAM UNREG
IC501 IC502
REG 5V
CHRACTOR GENERATOR
IC201
·INPUT SELECT ·AGC ·VIDEO OUT
Q210
IC202
CCD COMB FILTER
IC203
Y/C PROCESS
VIDEO
IC810
AF UNREG
ZOOM MOTOR DRIVE
IC805
FOCUS MOTOR DRIVE
AUTO FOCUS
IC801 IC80
IC806 IC80
R850
R849
5V
IRIS HALL
AUTO FOCU
IC8
EVR
(See Page 167)
MX-7 BOARD
L604
L603
L601
5V(D)
5V(A)
MATRIX
IC605
CHROMA PROCESS
IC607
CLAMP & BLANKING
IC609
EVR
IC601
EVR/ AUTO WHITE BALANCE CPU
EVER 5V
IC602
IC603
AUTO WHITE BALANCE
IC606
R617
ENCODER
IC608
EVR
IC604
L610
SYNC GENERATOR
L605
L606
L613
L608
DT-73 BOARD (See Page 164)
·SINGLE SEPALATION ·AGC/IRIS CONTROL ·TIMING GENERATOR ·V DRIVE
CAMERA
CD-10P BOARD
IC601
CCD IMAGER
(See Page 87)
W601
CN601


Page 153)
O BOARD
IC101
JOG CHROMA PROCESS
CO-2P BOARD
(See Page 133, 141)
VIDEO
IC101
REC/PB AMP
RP 5V
CN502
W502
CAM UNREG
EVER 5V
CN501
W501
VP SAVE
SS 5V
VTR DD ON
CAM DD ON
MT UNREG
AUDIO 5V
SERVO / SYSCON
Q515~517, 537, 538
DEW DETECT
L501
PS502
IC502
5V REG
EVER 5V
L505
IC501
SERVO/SYSTEM CONTROL
EVER 5V
AV REF
AV DD
MNI
VDD
VPP
RV551
BATTERY END
BATT SENS
IC503
RESET
VP SAVE
CAM DD ON
DTR DD ON
VTR P SW
CAM P SW
LINCS
LINCS POWER
L502
IC510
SP/LP DET CLOG DET
IC506, IC510
· CAPSTAN / DRUM · FG/PG AMP · SERVO ERROR AMP
IC509
L506
ATF SERVO
IC507
DRUM MOTOR DRIVE
IC508
CAPSTAN MOTOR DRIVE
TAPE TOP / END DETECT
IC621
SERVO PWM
MT UNREG
L621
PS503
SS5V
Q531, 532
CURRENT LIMITER
Q533, 534
LINCS DC SWITCH
IC401
AUDIO 5V
AUDIO
IC504
LOADING MOTOR DRIVE
Q520, 521
5V REG
VCC
IC505
5V REG
IC810
ZOOM MOTOR DRIVE
IC807
IRIS DRIVE HALL AMP
IC805
FOCUS MOTOR DRIVE
IC801 IC802 IC803
IC806 IC808
R850
R849
AUTO FOCUS
IC804
EVR
OCUS
01
HITE CPU
HITE CE
ER
RA
EVER 5V
CN802
W802
SS 5V
EVR 5V
LI-10 BOARD (See Page 127)
IC901, IC902
DIGITAL TITLE
IC903
TITLE MEMORY
LITHIUM BATTERY
W651
DDS B+
LI 3V
CK-8P BOARD (See Page 125)
SS5V
Q652
Q653
SS 5V DETECT
Q654
IC651
FEATURE CONTROL (DDS CPU)
VDD
VK-1P BOARD
(See Page 149)
S501
POWER
PLAYER (VTR)
OFF
CAMERA
CN507
W507
VTR SW
CAM SW
RC-26P BOARD
(See Page 150)
S951
STANDBY
OFF
STANDBY
W951
CN951
CAM SW
CAM COM
LINCS POWER
LINCS DC
AUDIO 5V
CN401
J951
REMOTE
MA-31P BOARD
IC451
MIC AMP
CURRENT LIMITER
CN451
AUDIO 5V
J452
MIC DC OUT
(See Page 149)
CC-15P BOARD
(See Page 141)
CN501
W501
5V
IC001
REEL FG AMP
FP-89 BOARD
(See Page 141)
CN001
D301
SUPPLY REEL FG SENSOR
Q301
TAPE END SENSOR
FP-90 BOARD
CN002
D303
TAKE-UP REEL FG SENSOR
Q302
TAPE TOP SENSOR
D302
TAPE LED (TOP/END) SENSOR
(See Page 141)

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
LD-13P (EXTERNAL LED)
VF-14P (VIEW FINDER)
EVF
RC-26P (START/STOP) (EARPHONE LINCS)
J951 REMOTE
J952
S901 ZOOM SWITCH (TELE/WIDE)
CD-10P (CCD IMAGER)
CCD
LENS
PS-180P (POWER SUPPLY)
CAM VTR D/D
FUSE
J901
6V BATTERY
HIC MX-7
HIC DT-73
AUSTRALIAN, E MODEL ONLY
J202 AUDIO IN VIDEO IN
J201 AUDIO OUT RFU DC OUT VIDEO OUT
CV-9 (VIDEO & CAMERA)
M905 ZOOM
S902 FOCUS END
M904 AF
ZOOM POTENTION UNIT
IRIS M906
MA-31P (MIC AMP)
MIC UNIT
J451 MIC JACK
J452 DC OUT JACK
CO-2P (COSMO V & AUDIO)
PJ-20
LI-10 (LITHIUM)
VK-1P (VIDEO KEY MATRIX)
CC-15P (U MD CONNECTION)
FP-90
FP-89
FG/PG
LOADING MOTOR M903
DEW SENSOR
DRUM MOTOR M901
CH1 CH2 FE
SHAFT GND MECHA DECK GND
S903 CC DOWN SW
CAPSTAN MOTOR M902
U MD
KS-3P
CK-8P (CAMERA KEY MATRIX)
DK-2P (EDIT SEARCH, COUNTER)
(CHECK PIN)

FRAME	FRAME

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

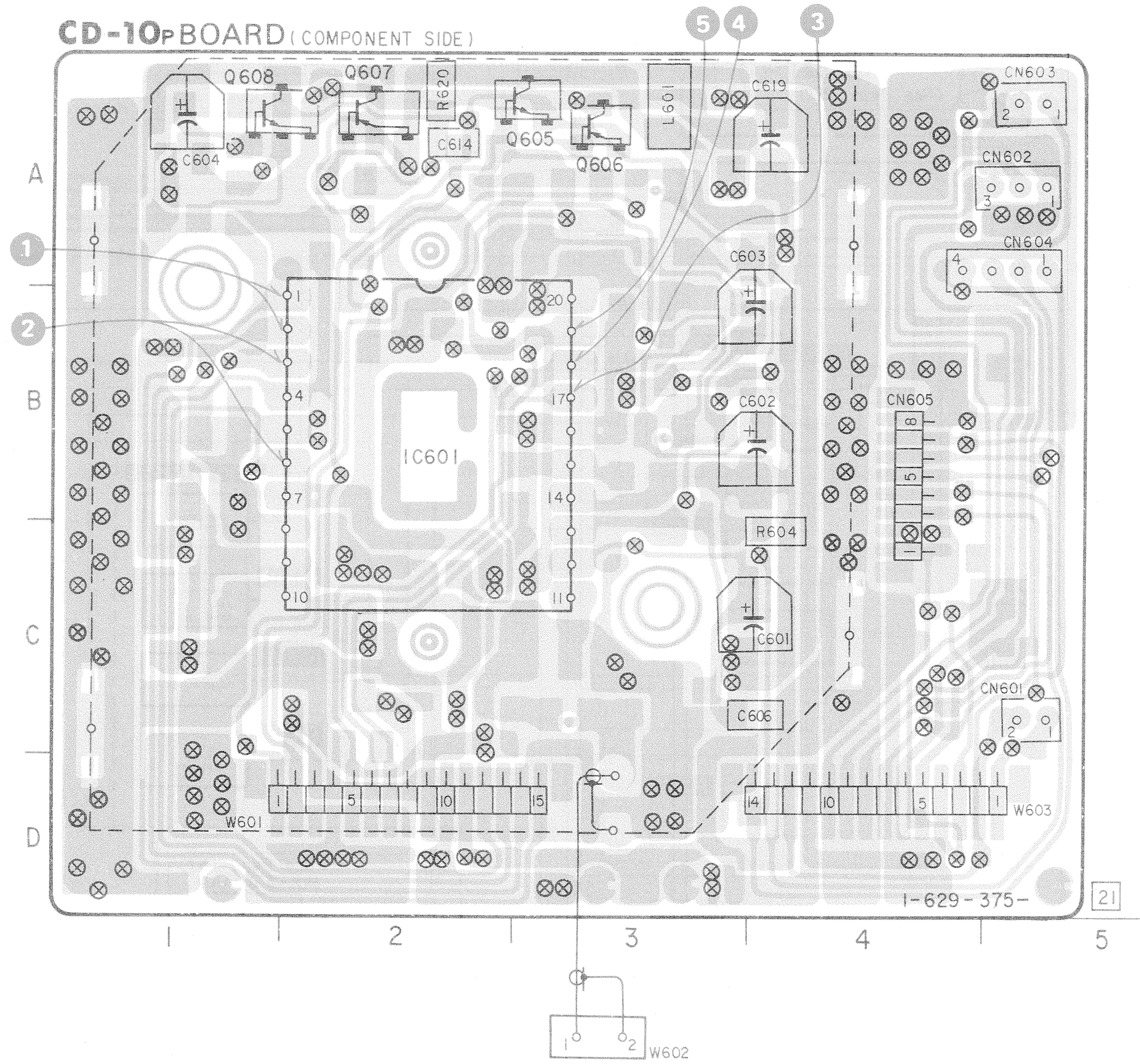
CD-10P (CCD IMAGER/ZOOM, FOCUS) PRINTED WIRING BOARDS

— Ref. No. CD-10P BOARD : 1000 series —

CD-10P BOARD

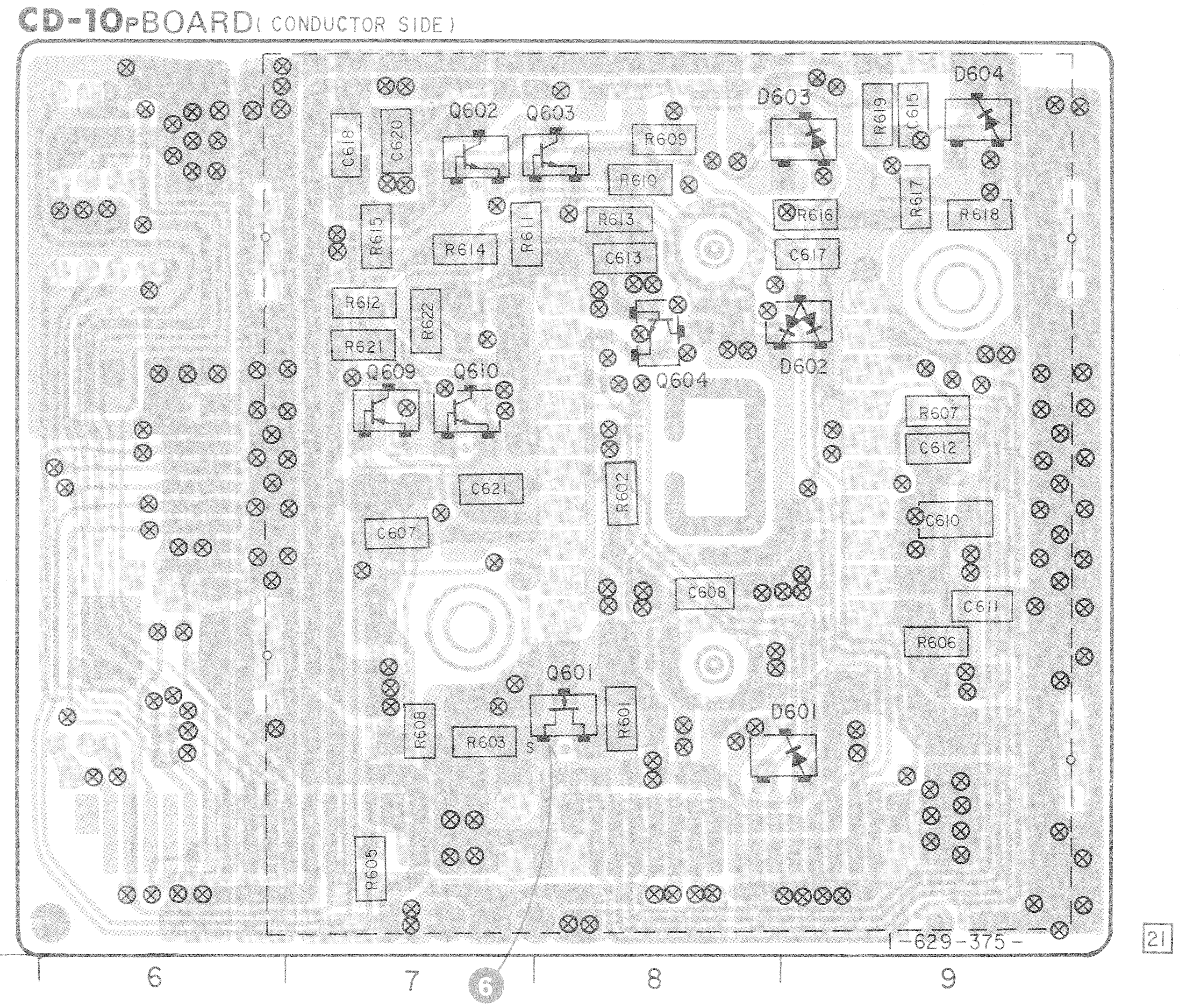
CN601	C-5
CN602	A-5
CN603	A-5
CN604	B-5
CN605	B-4
D601	C-9
D602	B-9
D603	A-8
D604	A-9
Q601	C-8
Q602	A-7
Q603	A-8
Q604	B-8
Q605	A-3
Q606	A-3
Q607	A-2
Q608	A-1
Q609	B-7
Q610	B-7
IC601	B-2
W601	D-2
W602	D-3
W603	D-4

CD-10P BOARD (COMPONENT SIDE)



⑤
④
③
①
②
A
B
C
D
1
2
3
4
5
Q608
Q607
Q605
Q606
R620
C614
C604
L601
C619
CN603
CN602
CN604
CN605
C603
C602
C601
C606
R604
IC601
CN601
W601
W603
W602
1-629-375-
21

CD-10P BOARD (CONDUCTOR SIDE)

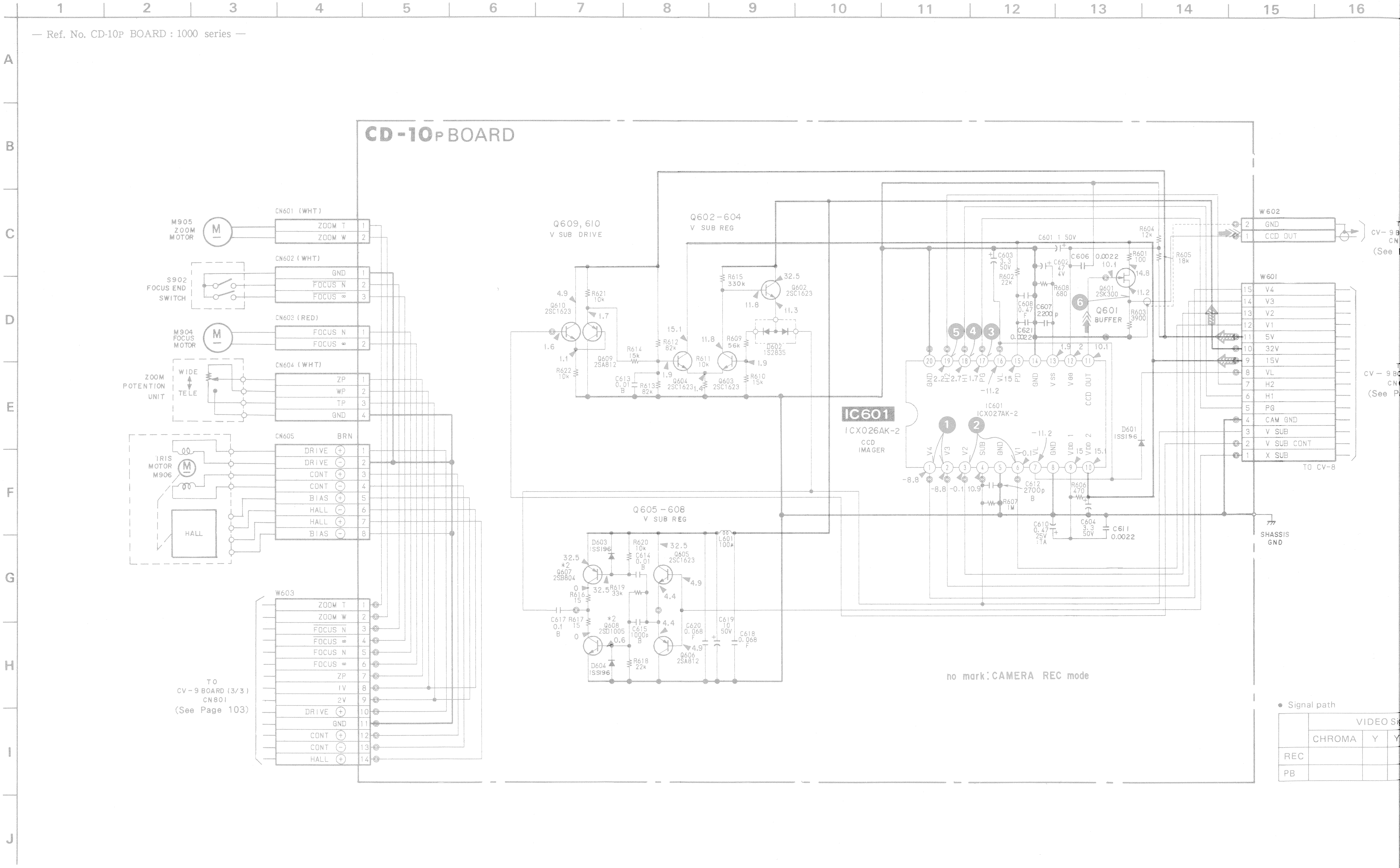


D604
D603
Q602
Q603
C618
C620
R609
R610
R619
C615
R617
R618
R616
C617
R613
C613
R615
R614
R611
R612
R621
R622
Q609
Q610
Q604
D602
R607
C612
C621
C607
R602
C610
C608
C611
R606
Q601
R608
R603
R601
D601
R605
6
7
8
9
⑥
1-629-375-
21

CAUTIONS FOR REPLACEMENT OF CCD IMAGER

- When you replaced the CCD imager adjust the whole camera assembly.
- CCD imager has such a structure that it may be destructed by static electricity, so handle it with a care similar for MOS IC.
  Further, be cartain that the light receiving part has no stick of dust and no entry of bright light.

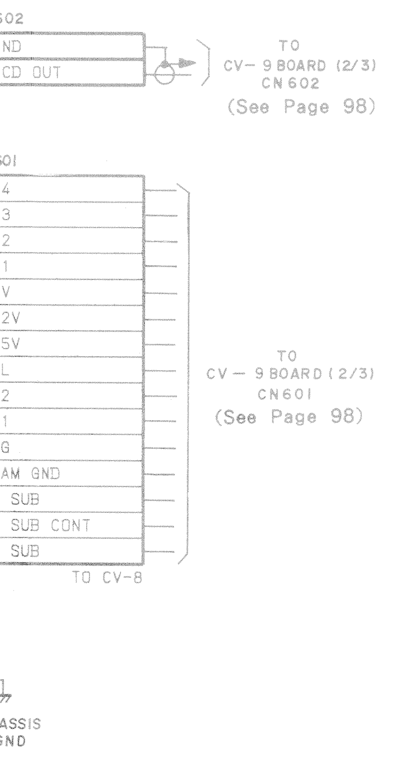
— Ref. No. CD-10P BOARD : 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
CD-10P BOARD
M905 ZOOM MOTOR
CN601 (WHT)
ZOOM T
ZOOM W
S902 FOCUS END SWITCH
CN602 (WHT)
GND
FOCUS N
FOCUS ∞
M904 FOCUS MOTOR
CN603 (RED)
ZOOM POTENTION UNIT
WIDE
TELE
CN604 (WHT)
ZP
WP
TP
IRIS MOTOR M906
HALL
CN605 BRN
DRIVE ⊕
DRIVE ⊖
CONT ⊕
CONT ⊖
BIAS ⊕
HALL ⊖
HALL ⊕
BIAS ⊖
W603
IV
2V
TO CV-9 BOARD (3/3) CN801 (See Page 103)
Q609, 610 V SUB DRIVE
Q610 2SC1623
Q609 2SA812
Q602-604 V SUB REG
Q602 2SC1623
Q603 2SC1623
Q604 2SC1623
D602 1S2835
Q605-608 V SUB REG
Q605 2SC1623
Q606 2SA812
Q607 2SB804
Q608 2SD1005
D603 1SS196
D604 1SS196
L601 100μ
IC601
ICX026AK-2
CCD IMAGER
Q601 BUFFER
Q601 2SK300
D601 1SS196
W602
GND
CCD OUT
W601
V4
V3
V2
V1
5V
32V
15V
VL
H2
H1
PG
CAM GND
V SUB
V SUB CONT
X SUB
TO CV-8
CV-9B
SHASSIS GND

no mark : CAMERA REC mode

● Signal path

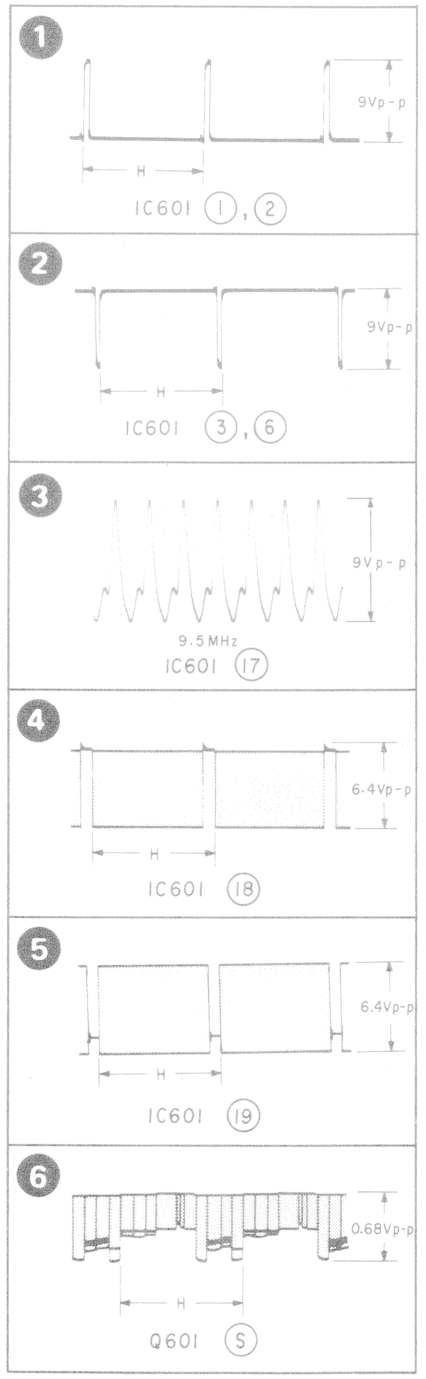
	VIDEO S		
	CHROMA	Y	Y
REC			
PB			


602
ND
CD OUT
TO
CV– 9 BOARD (2/3)
CN602
(See Page 98)
601
4
3
2
1
V
2V
5V
L
2
1
G
AM GND
SUB
SUB CONT
SUB
TO CV-8
TO
CV – 9 BOARD (2/3)
CN601
(See Page 98)
ASSIS
GND

- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC			⇛	
PB				

CD-10P BOARD


①
9Vp-p
H
IC601 ①,②
②
9Vp-p
H
IC601 ③,⑥
③
9Vp-p
9.5MHz
IC601 ⑰
④
6.4Vp-p
H
IC601 ⑱
⑤
6.4Vp-p
H
IC601 ⑲
⑥
0.68Vp-p
H
Q601 Ⓢ

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

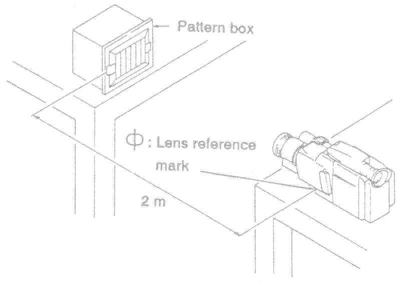
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repeair.
- ━ : B+ Line.
- ⇛ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA, DIGITAL TITLE, VIEW FINDER block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Φ : Lens reference mark
2 m

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

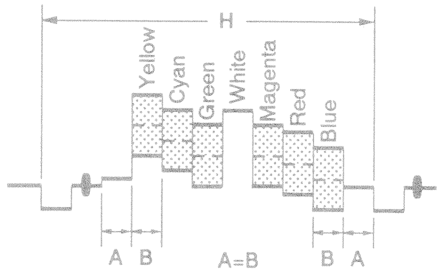

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

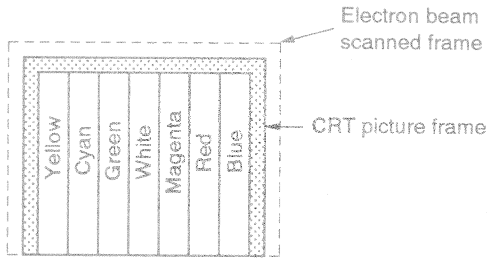

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

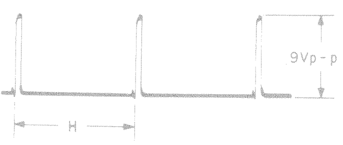
(VIDEO, SERVO/SYSTEM CONTROL, VIDEO FUNCTION)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

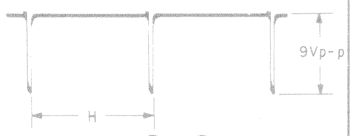
There are not the external input terminal (VIDEO/AUDIO IN) and REC switch in AEP, UK model. Accordingly, perform as the followings for REC mode.

Signal input:	Refer to the video signal input method for the model without the external input terminal described in VIDEO BLOCK ADJUSTMENTS (page 242, Fig. 9-2).
REC mode:	Refer to the transition method to REC mode for the model without the external input terminal in the same Fig. 9-2.

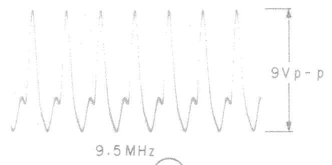
10P BOARD



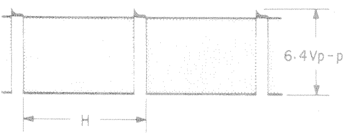
IC601 ①, ②



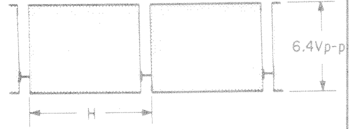
IC601 ③, ⑥



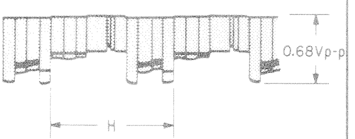
IC601 ⑰



IC601 ⑱



IC601 ⑲



Q601 Ⓢ

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

• For printed wiring boards.

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- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

• For schematic diagrams.

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repeair.
- — : B+ Line.
- ⇒ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

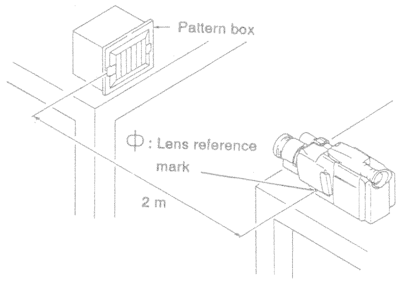
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

• Measuring conditions voltage value and waveform. (CAMERA, DIGITAL TITLE, VIEW FINDER block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

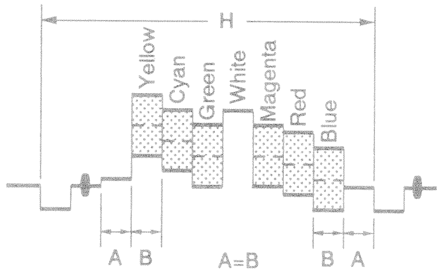


Fig. a (Video output terminal output waveform)

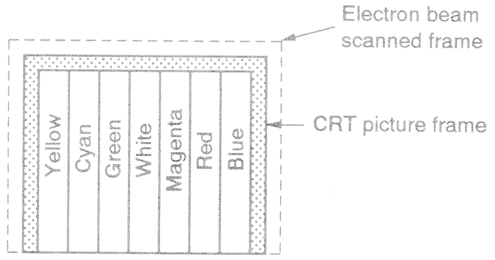


Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, VIDEO FUNCTION)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

There are not the external input terminal (VIDEO/AUDIO IN) and REC switch in AEP, UK model. Accordingly, perform as the followings for REC mode.

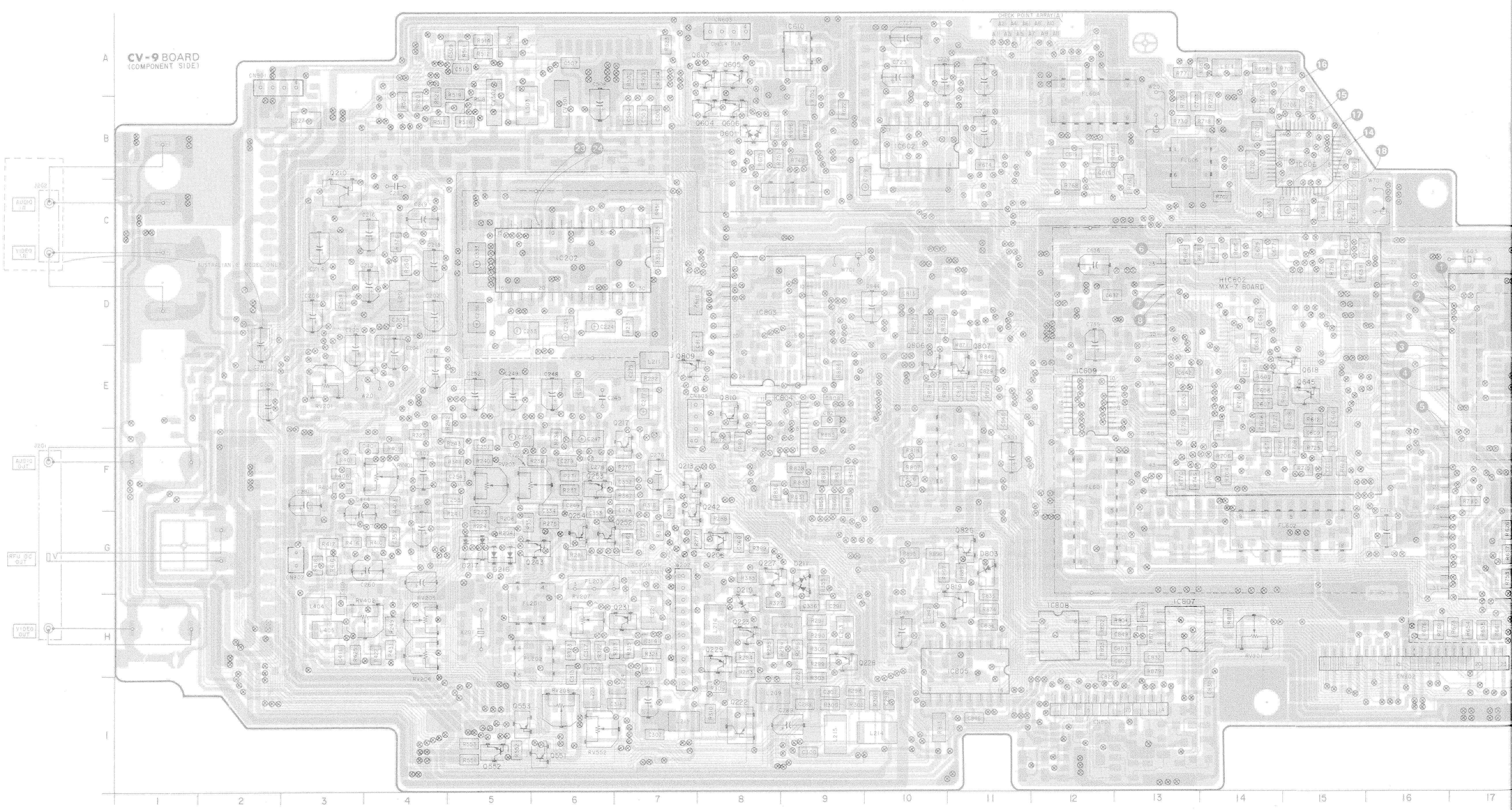
Signal input:	Refer to the video signal input method for the model without the external input terminal described in VIDEO BLOCK ADJUSTMENTS (page 242, Fig. 9-2).
REC mode:	Refer to the transition method to REC mode for the model without the external input terminal in the same Fig. 9-2.

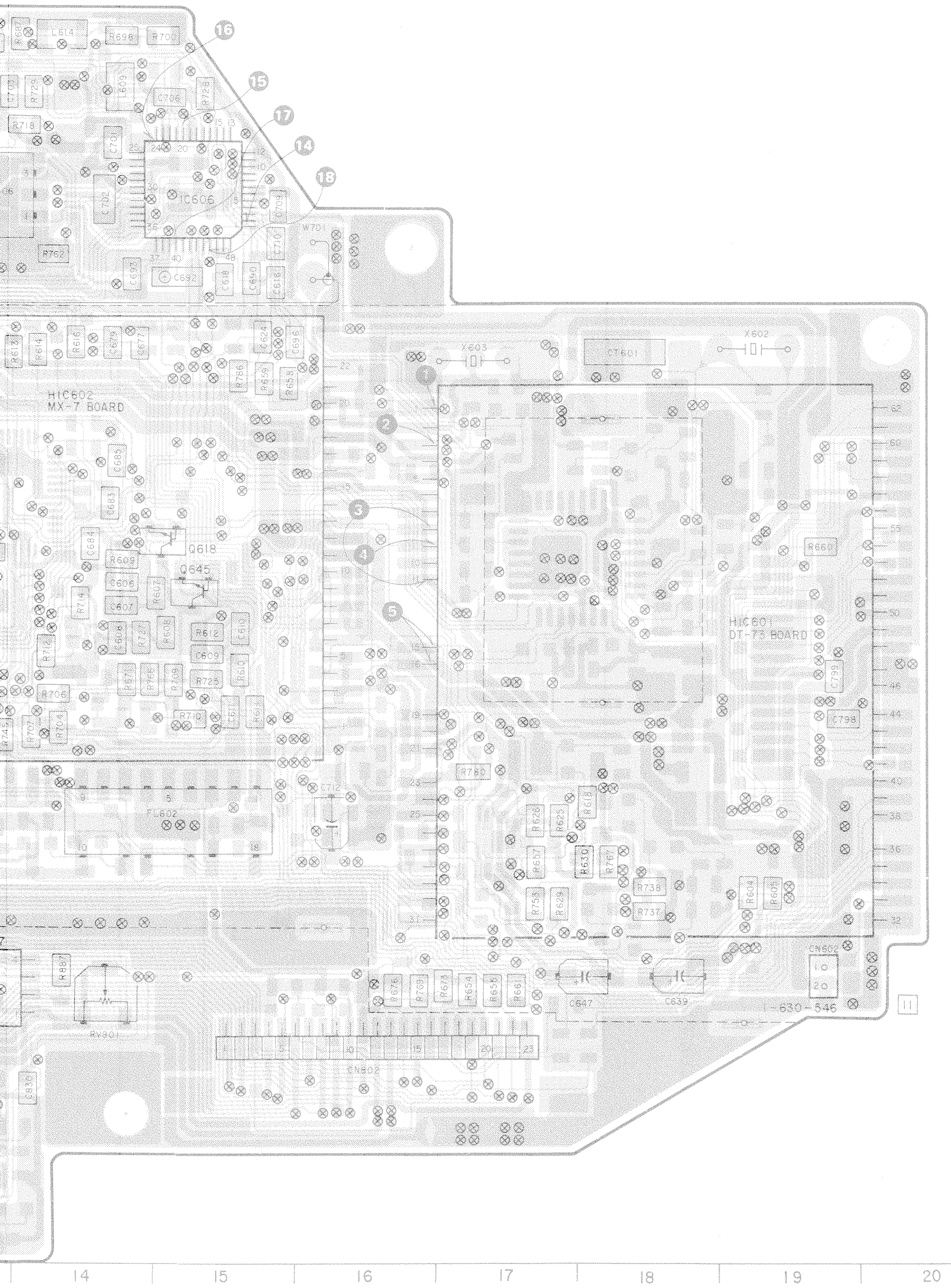
CV-9 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-9 BOARD : 2000 series —

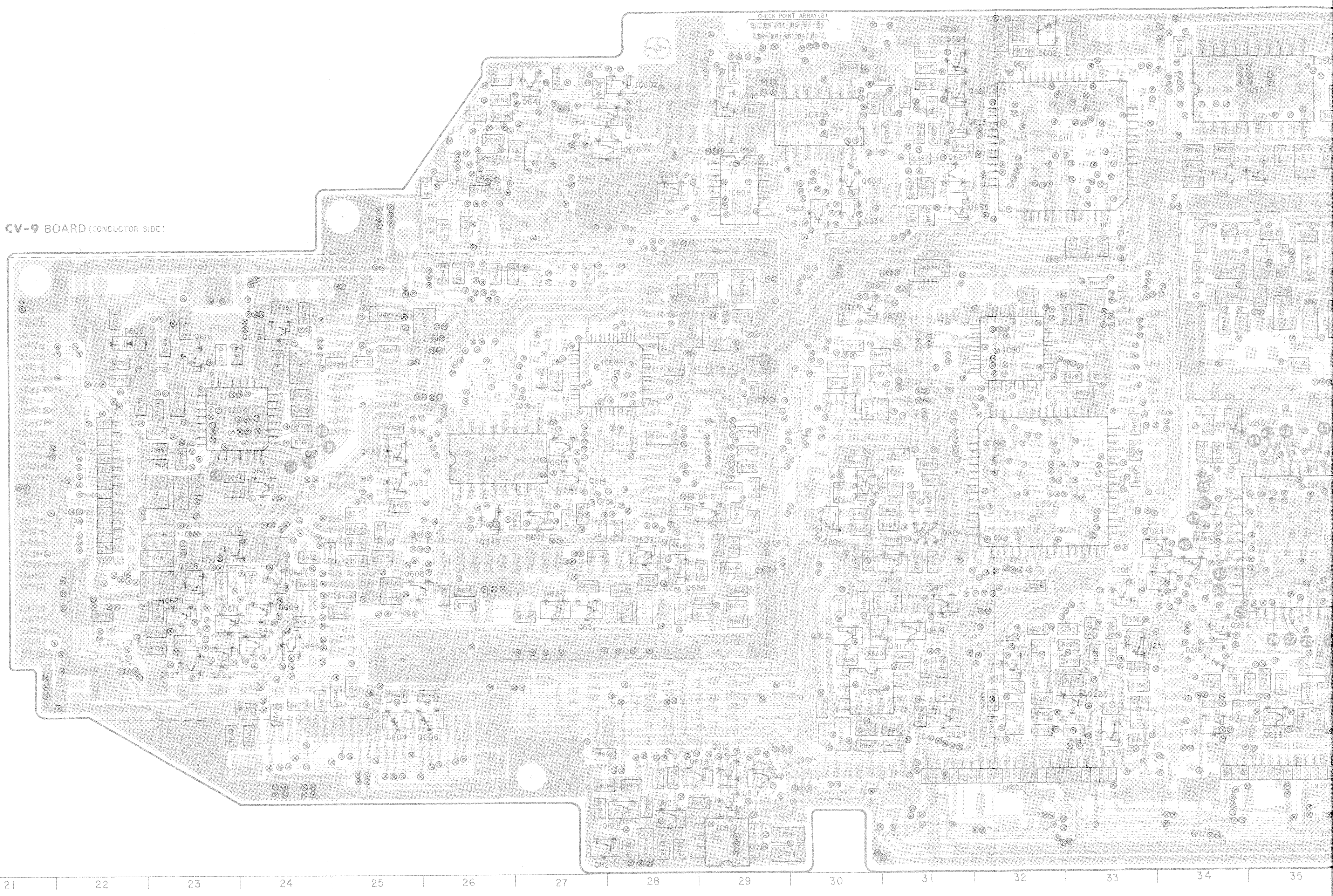
CV-9 BOARD

CN501	I-35
CN502	I-32
CN601	E-22
CN602	H-19
CN603	A-8
CN801	I-12
CN802	H-16
CN803	E-7
CN901	A-2
CN902	G-3
CT601	C-18
CV501	B-16
CV502	B-5
D211	G-9
D213	C-37
D216	G-6
D217	G-5
D218	H-34
D219	H-8
D401	G-38
D501	A-36
D601	B-8
D602	A-32
D604	H-25
D605	D-22
D606	H-26
D803	G-11
IC201	D-37
IC202	D-6
IC203	F-35
IC501	A-35
IC502	A-36
IC601	B-32
IC602	B-10
IC603	B-30
IC604	E-23
IC605	D-28
IC606	B-15
IC607	E-26
IC608	B-29
IC609	E-12
IC610	A-9
IC801	D-32
IC802	F-32
IC803	D-8
IC804	E-8
IC805	E-11
IC806	H-30
IC807	H-13
IC808	H-12
IC810	I-29
Q202	B-38
Q203	E-39
Q204	F-39
Q206	G-8
Q207	G-33
Q208	B-37
Q209	C-37
Q210	C-3
Q211	E-38
Q212	G-34
Q213	F-7
Q215	H-36
Q216	E-34
Q217	F-7
Q222	I-8
Q223	H-8
Q224	H-32
Q225	H-33
Q226	G-34
Q227	G-8
Q228	H-9
Q229	H-8
Q230	H-34
Q231	H-7
Q232	G-34
Q233	H-35
Q241	F-34
Q242	F-7
Q243	G-6
Q244	E-38
Q250	H-33
Q251	G-33
Q252	G-6
Q253	F-6
Q254	G-6
Q401	F-38
Q403	F-38
Q405	F-37
Q406	G-37
Q407	G-38
Q408	G-38
Q409	H-38
Q410	H-37
Q501	B-34
Q502	B-35
Q551	I-6
Q552	I-5
Q553	I-5
Q602	A-28
Q603	G-25
Q604	B-8
Q605	A-8
Q606	B-8
Q607	A-8
Q608	B-30
Q609	G-24
Q610	E-23
Q611	G-23
Q612	F-29
Q613	E-27
Q614	F-27
Q615	D-24
Q616	D-23
Q617	D-28
Q618	E-15
Q619	B-28
Q620	H-23
Q621	A-31
Q622	C-30
Q623	B-31
Q624	A-31
Q625	B-31
Q626	G-23
Q627	H-23
Q628	G-23
Q629	F-28
Q630	G-27
Q631	G-27
Q632	F-25
Q633	E-25
Q634	G-28
Q635	E-24
Q638	C-31
Q639	C-30
Q640	A-29
Q641	A-27
Q642	F-27
Q643	F-26
Q644	G-24
Q645	E-15
Q646	G-24
Q647	G-24
Q648	B-28
Q801	F-30
Q802	G-31
Q803	F-30
Q804	F-31
Q805	I-29
Q806	E-10
Q807	E-11
Q809	E-7
Q810	E-8
Q811	I-29
Q812	I-29
Q816	G-31
Q817	G-30
Q818	I-29
Q819	H-11
Q820	G-30
Q822	I-28
Q824	H-31
Q825	G-31
Q826	G-11
Q827	I-27
Q828	I-28
Q830	D-30
RV201	E-3
RV202	F-5
RV203	F-5
RV204	H-4
RV205	H-4
RV207	H-6
RV208	I-6
RV401	F-4
RV402	H-4
RV552	I-6
RV801	H-14
W202	H-7
W901	G-39
W902	C-39

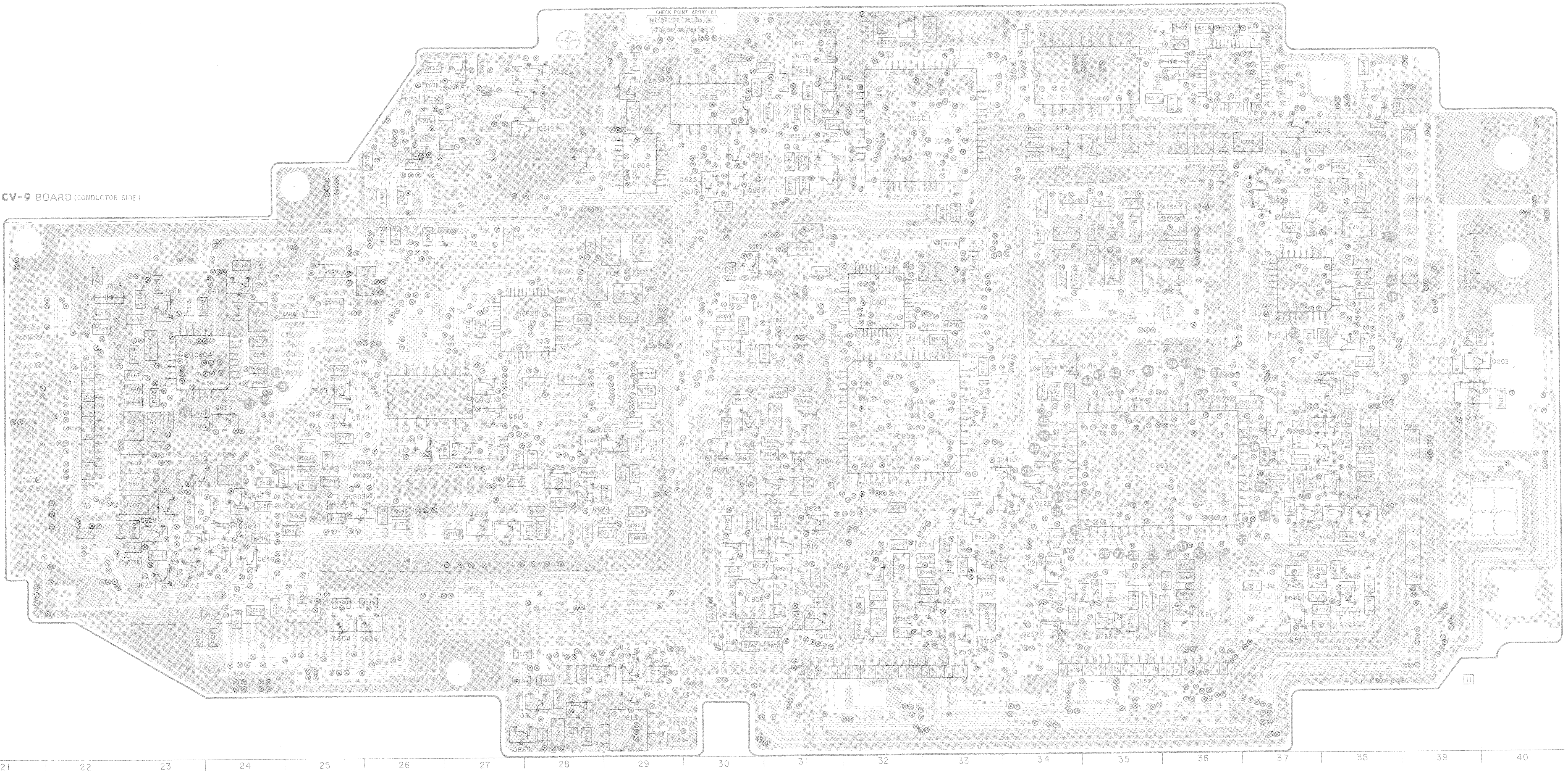

CV-9 BOARD
(COMPONENT SIDE)
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
AUDIO IN
VIDEO IN
AUDIO OUT
RF DC OUT
VIDEO OUT
AUSTRALIAN E MODEL ONLY
IC202
IC602
IC606
IC603
IC609
IC805
IC808
IC807
H1C602
MX-7 BOARD
CHECK POINT ARRAY
CN901
CN603
CN801
CN802


IC606
HIC602
MX-7 BOARD
HIC601
DT-73 BOARD
X603
X602
FL602
RV901
CN802
CN801
1-630-546
14
15
16
17
18
19
20

CV-9 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY(B)
IC603
IC608
IC601
IC501
IC604
IC605
IC607
IC801
IC802
IC806
IC810
CN502
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

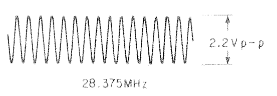
CV-9 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY(B)
IC601
IC603
IC608
IC501
IC502
IC604
IC605
IC607
IC801
IC802
IC806
IC810
IC201
IC203
CN501
CN502
AUSTRALIAN MODEL ONLY
1-630-546
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40

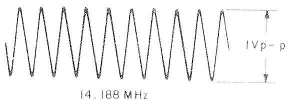
- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	⇒	⇛	
PB				

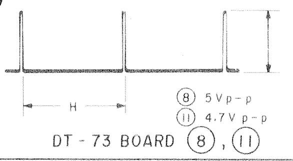
CV-9 BOARD (CAMERA)

❶


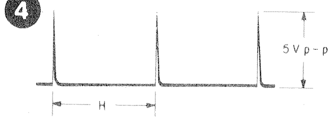
DT-73 BOARD ①

❷


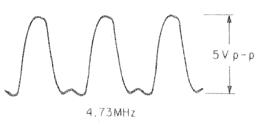
DT-73 BOARD ③

❸


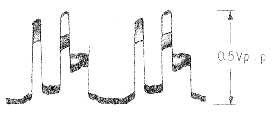
DT-73 BOARD ⑧, ⑪

❹


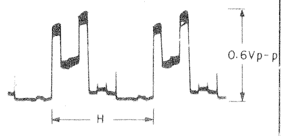
DT-73 BOARD ⑨

❺


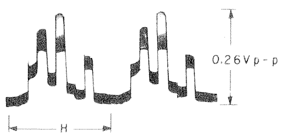
DT-73 BOARD ⑮, ⑯

❻


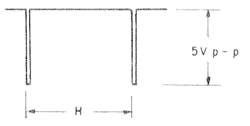
MX-7 BOARD ㉓

❼


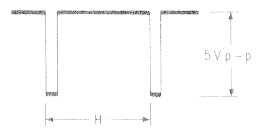
MX-7 BOARD ㉕

❽


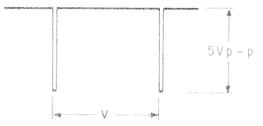
MX-7 BOARD ㉖

❾


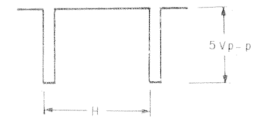
IC604 ①

❿


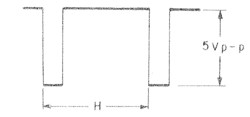
IC604 ㉙

⓫


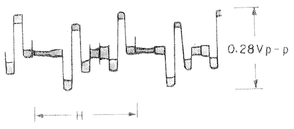
IC604 ㉚

⓬


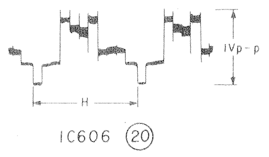
IC604 ㉛

⓭


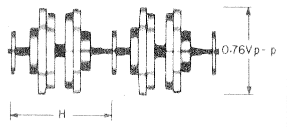
IC604 ㉜

⓮


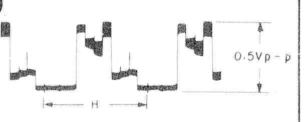
IC606 ①

⓯


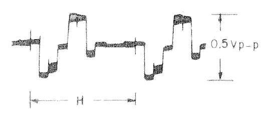
IC606 ⑳

⓰


IC606 ㉔

⓱


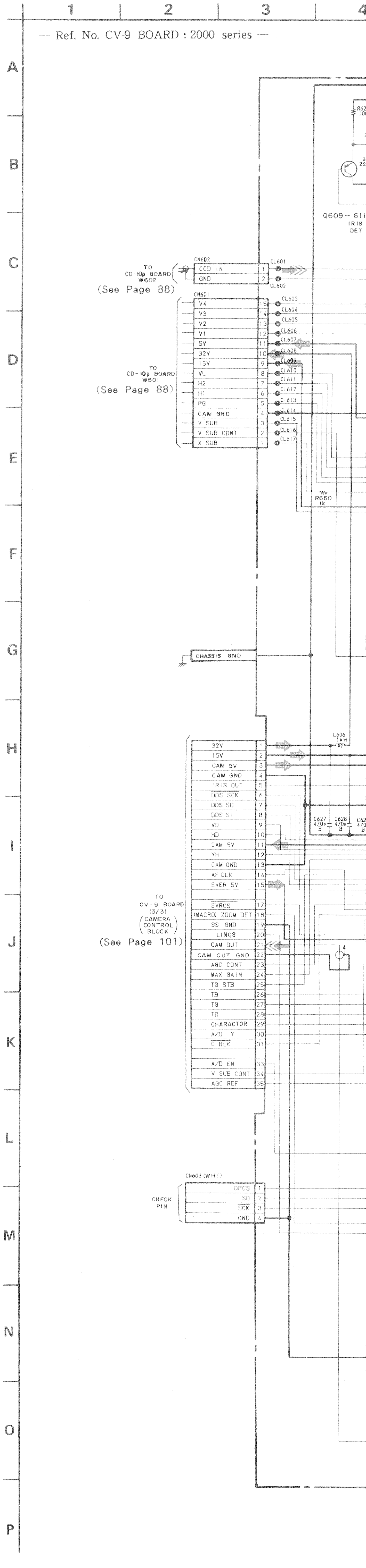
IC606 ㊵

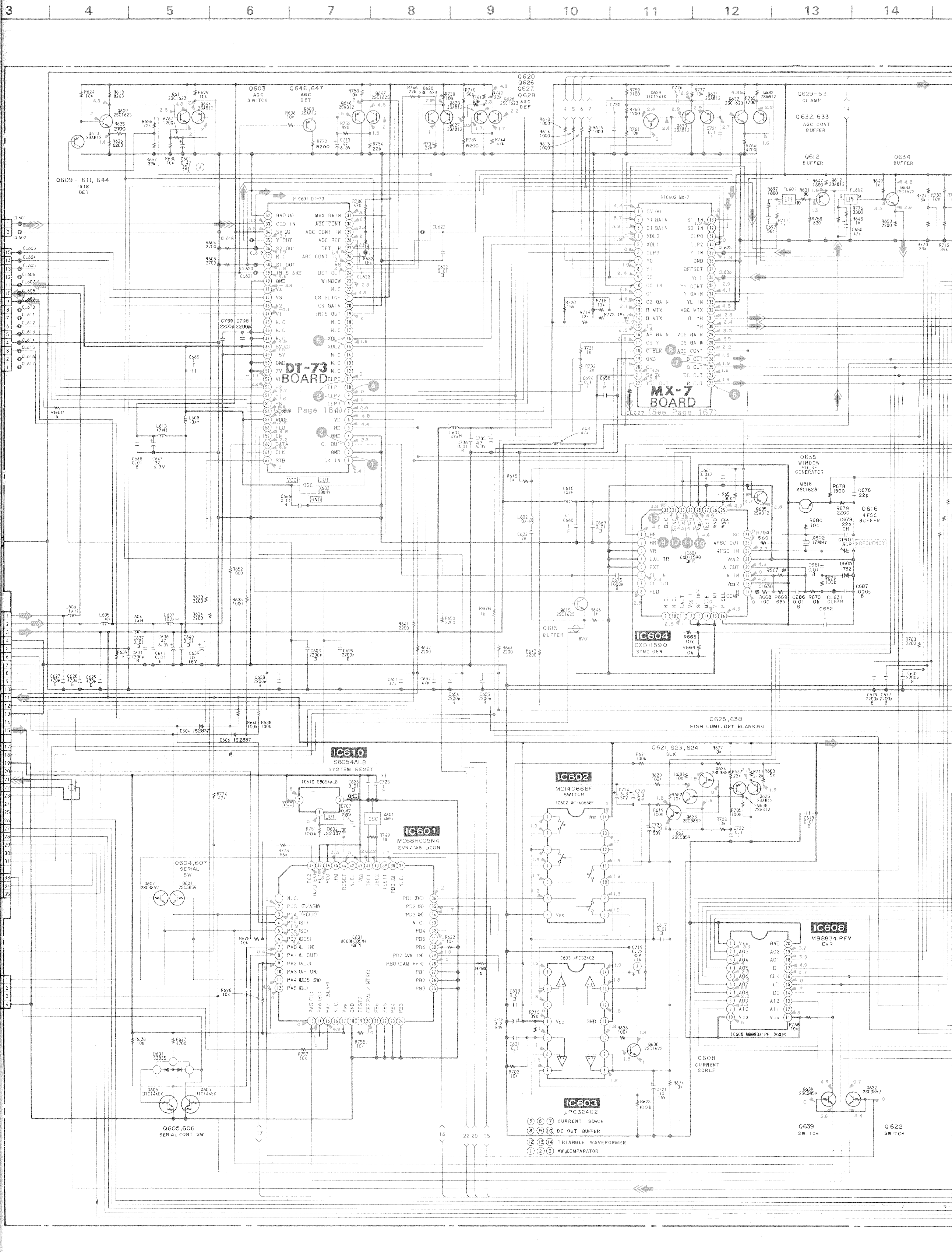
⓲


IC606 ㊺

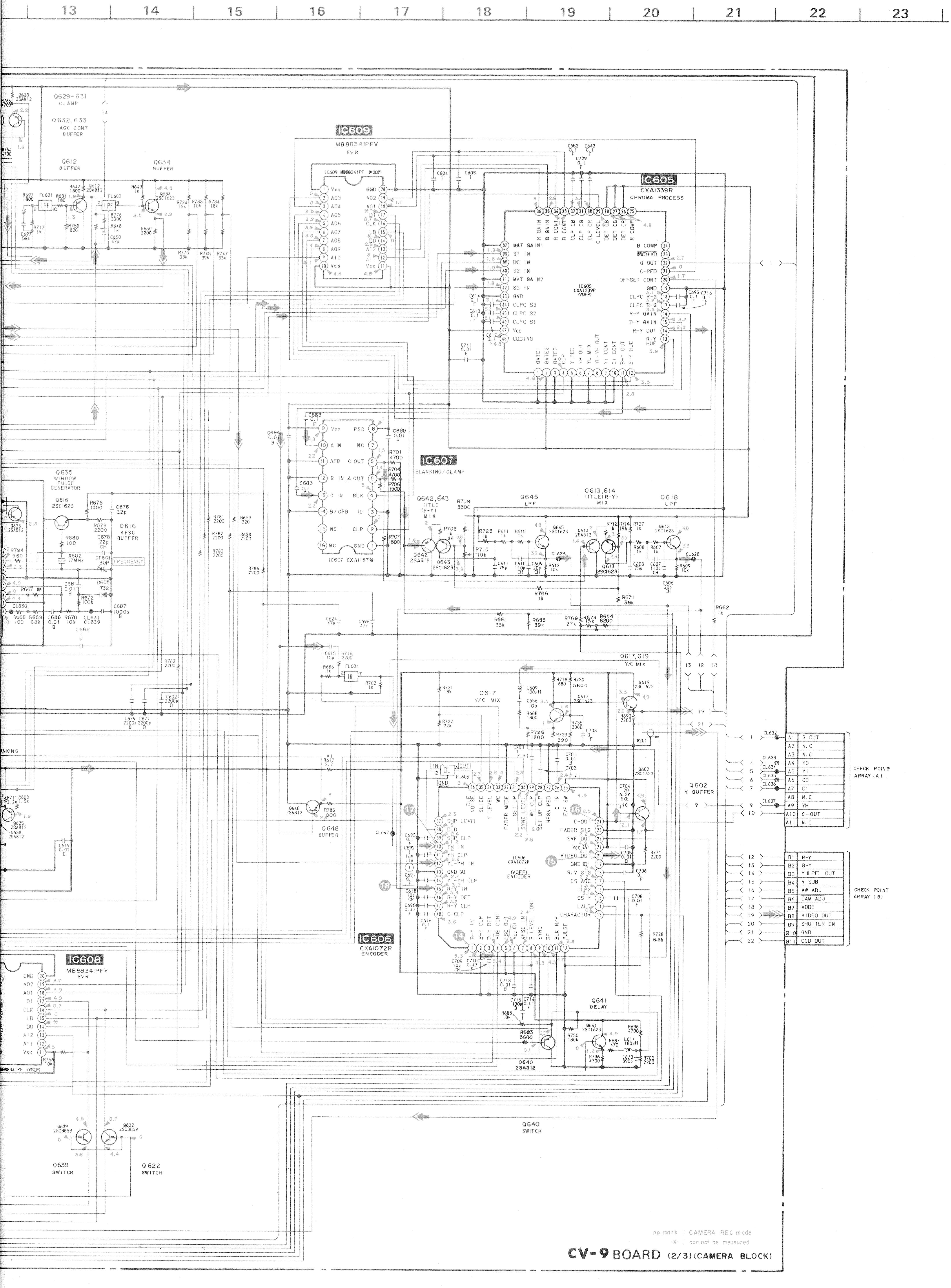
CV-9 (CAMERA) SCHEMATIC DIAGRAMS

— Ref. No. CV-9 BOARD : 2000 series —


1
2
3
4
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q609 - 611
IRIS
DET
CN602
CCD IN
GND
TO
CD-10p BOARD
W602
(See Page 88)
CN601
V4
V3
V2
V1
5V
32V
15V
VL
H2
H1
PG
CAM GND
V SUB
V SUB CONT
X SUB
TO
CD-10p BOARD
W601
(See Page 88)
R660
1k
CHASSIS GND
L606
32V
15V
CAM 5V
CAM GND
IRIS OUT
DDS SCK
DDS SO
DDS SI
VD
HD
CAM 5V
YH
CAM GND
AF CLK
EVER 5V
EVRCS
(MACRO) ZOOM DET
SS GND
LINCS
CAM OUT
CAM OUT GND
AGC CONT
MAX GAIN
TG STB
TB
TG
TR
CHARACTOR
A/D Y
C BLK
A/D EN
V SUB CONT
AGC REF
TO
CV-9 BOARD
(3/3)
(CAMERA CONTROL BLOCK)
(See Page 101)
C627
470p
C628
470p
CN603
CHECK PIN
DPCS
SO
SCK
GND



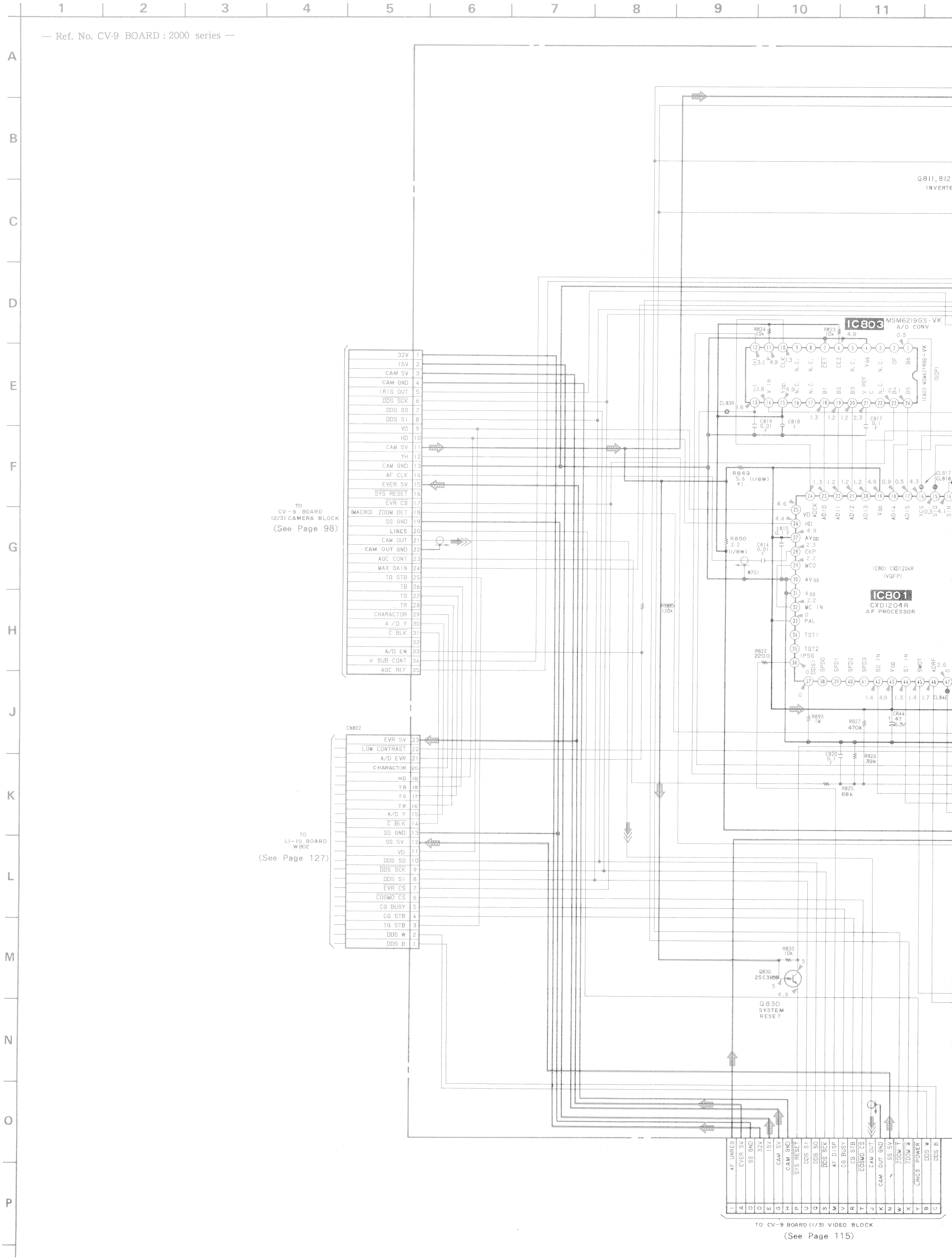
Q609-611, 644
IRIS DET
Q603
AGC SWITCH
Q646, 647
AGC DET
Q620
Q626
Q627
Q628
AGC DEF
Q629-631
CLAMP
Q632, 633
AGC CONT BUFFER
Q612
BUFFER
Q634
BUFFER
HIC601 DT-73
DT-73 BOARD
(See Page 164)
HIC602 MX-7
MX-7 BOARD
(See Page 167)
Q635
WINDOW PULSE GENERATOR
Q616
4FSC BUFFER
FREQUENCY
IC604
CXD1159Q
SYNC GEN
Q615
BUFFER
Q625, 638
HIGH LUMI. DET BLANKING
Q621, 623, 624
BLK
IC610
S8054ALB
SYSTEM RESET
IC601
MC68HC05N4
EVR/WB μCON
IC602
MC14066BF
SWITCH
IC603
μPC324G2
⑤⑥⑦ CURRENT SORCE
⑧⑨⑩ DC OUT BUFFER
⑫⑬⑭ TRIANGLE WAVEFORMER
①②③ AW COMPARATOR
IC608
MB88341PFV
EVR
Q608
CURRENT SORCE
Q604, 607
SERIAL SW
Q605, 606
SERIAL CONT SW
Q639
SWITCH
Q622
SWITCH
3
4
5
6
7
8
9
10
11
12
13
14

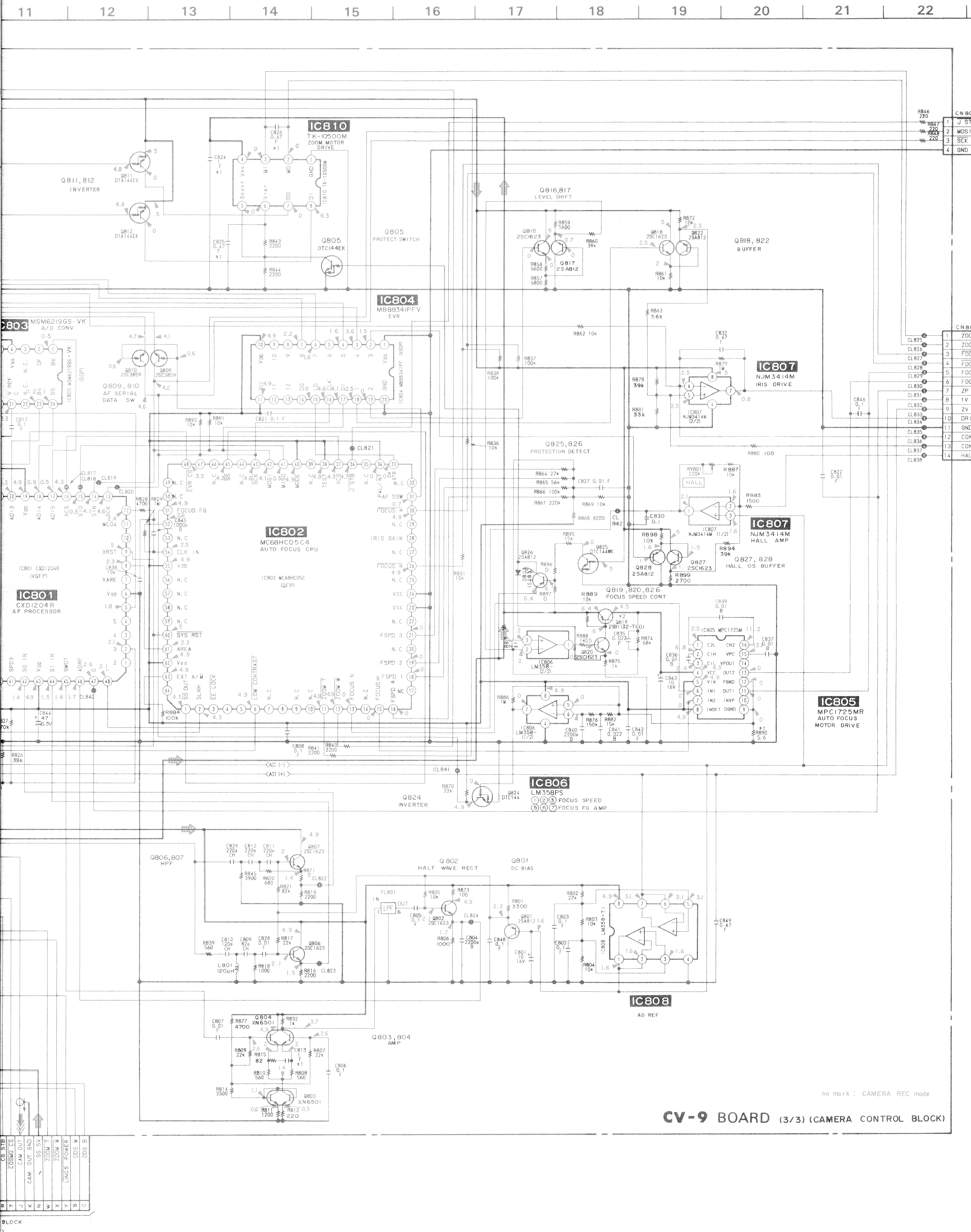

13
14
15
16
17
18
19
20
21
22
23
Q629-631 CLAMP
Q632, 633 AGC CONT BUFFER
Q612 BUFFER
Q634 BUFFER
IC609
MB88341PFV
EVR
IC605
CXA1339R
CHROMA PROCESS
IC607
BLANKING/CLAMP
IC607 CXA1157M
Q635 WINDOW PULSE GENERATOR
Q616 4FSC BUFFER
X602 17MHz
FREQUENCY
Q642,643 TITLE (B-Y) MIX
Q645 LPF
Q613,614 TITLE(R-Y) MIX
Q618 LPF
Q617,619 Y/C MIX
Q617 Y/C MIX
Q648 BUFFER
Q602 Y BUFFER
IC606
CXA1072R
ENCODER
Q641 DELAY
Q640 2SA812
Q640 SWITCH
IC608
MB88341PFV
EVR
Q639 SWITCH
Q622 SWITCH
A1 G OUT
A2 N.C
A3 N.C
A4 YO
A5 Y1
A6 CO
A7 C1
A8 N.C
A9 YH
A10 C-OUT
A11 N.C
CHECK POINT ARRAY (A)
B1 R-Y
B2 B-Y
B3 Y (LPF) OUT
B4 V SUB
B5 AW ADJ
B6 CAM ADJ
B7 MODE
B8 VIDEO OUT
B9 SHUTTER EN
B10 GND
B11 CCD OUT
CHECK POINT ARRAY (B)

no mark : CAMERA REC mode
※ : can not be measured

CV-9 BOARD (2/3)(CAMERA BLOCK)

— Ref. No. CV-9 BOARD : 2000 series —


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
J
K
L
M
N
O
P
Q811, 812
INVERTE
IC803 MSM6219GS-VK
A/D CONV
R824 10k
R823 10k
CL839
C819 0.01 F
C818 1
C817 0.1 F
IC803 MSM6219GS-VK (SDP)
CLK
CE1
CE2
N.C.
VSS
OF
B6
V IN
B1
B2
B3
V REF
B5
R849 5.6 (1/8W) *1
R850 2.2 (1/8W)
C815 0.1 F
C814 0.01 F
W701
CL817
CL818
IC801 CXD1204R (VQFP)
IC801
CXD1204R
AF PROCESSOR
VD
ADCK
AD10
AD11
AD12
AD13
VDD
AD14
AD15
XCS
SO
SIN
HD
AVDD
CKP
MCO
AVSS
VSS
MC IN
PAL
TST1
TST2
IPSG
DDS1
SPD0
SPD1
SPD2
SPD3
SO IN
SI IN
SWDT
ADRF
CL840
R822 2200
R893 1M
R827 470k
C844 47 6.3V
C820 0.1 F
R826 39k
R825 68k
R885 120k
TO CV-9 BOARD (2/3) CAMERA BLOCK
(See Page 98)
32V 1
15V 2
CAM 5V 3
CAM GND 4
IRIS OUT 5
DDS SCK 6
DDS SO 7
DDS SI 8
VD 9
HD 10
CAM 5V 11
YH 12
CAM GND 13
AF CLK 14
EVER 5V 15
SYS RESET 16
EVR CS 17
(MACRO) ZOOM DET 18
SS GND 19
LINCS 20
CAM OUT 21
CAM OUT GND 22
AGC CONT 23
MAX GAIN 24
TG STB 25
TB 26
TG 27
TR 28
CHARACTOR 29
A/D Y 30
C BLK 31
32
A/D EN 33
V SUB CONT 34
AGC REF 35
CN802
TO LI-10 BOARD W802
(See Page 127)
EVR 5V 23
LOW CONTRAST 22
A/D EVR 21
CHARACTOR 20
HD 19
TB 18
TG 17
TR 16
A/D Y 15
C BLK 14
SS GND 13
SS 5V 12
VD 11
DDS SO 10
DDS SCK 9
DDS SI 8
EVR CS 7
COSMO CS 6
CG BUSY 5
CG STB 4
TG STB 3
DDS W 2
DDS B 1
R833 10k
Q830 2SC3859
Q830 SYSTEM RESET
AF UNREG
EVER 5V
SS GND
32V
15V
CAM 5V
CAM GND
SYS RESET
DDS SO
DDS SI
DDS SCK
AF DISP
CG BUSY
CG STB
COSMO CS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B
I A O D E G H P U Q S M V R T J K N W X Y B C
TO CV-9 BOARD (1/3) VIDEO BLOCK
(See Page 115)

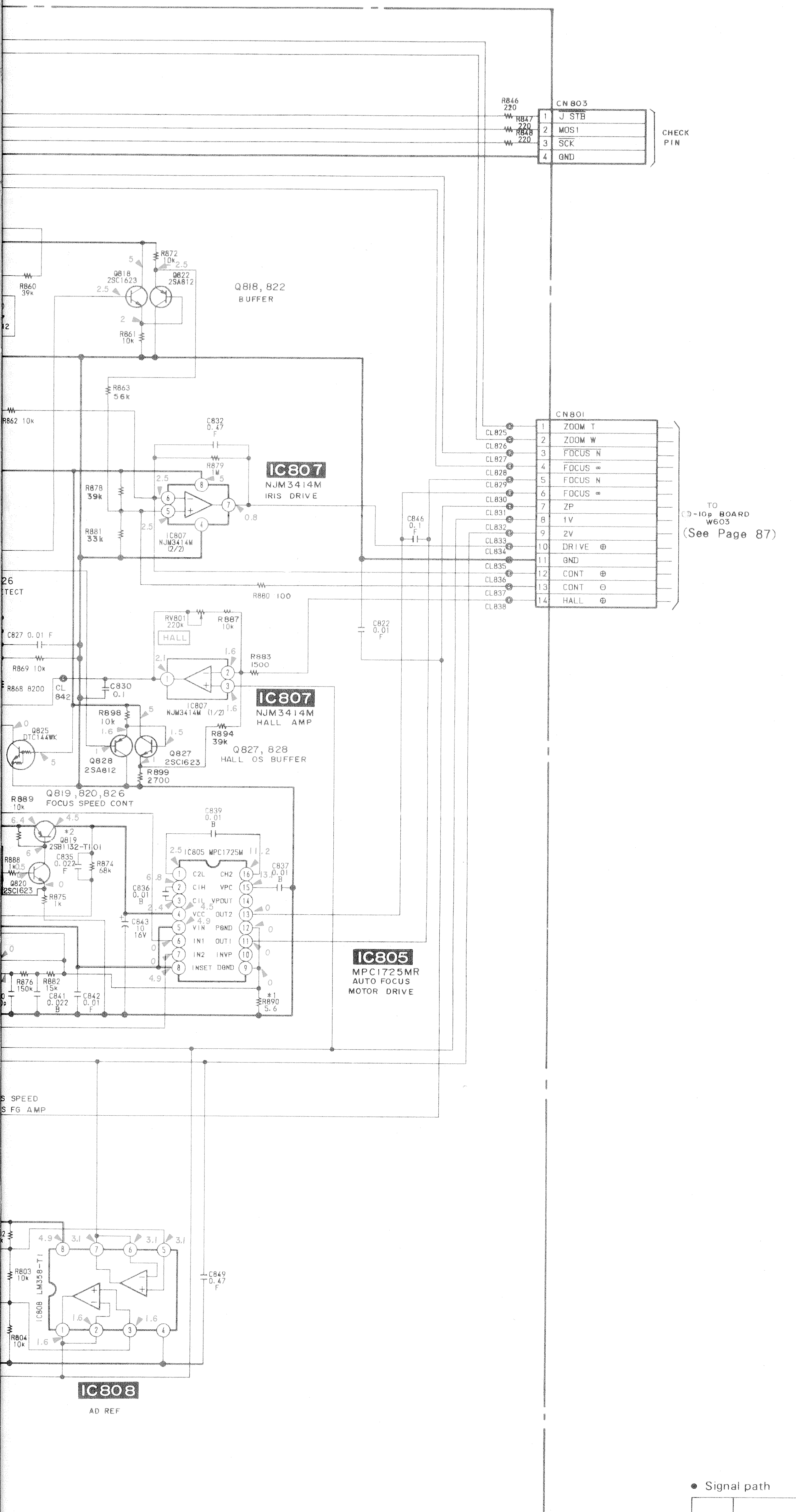


11
12
13
14
15
16
17
18
19
20
21
22
IC810
TK-10500M
ZOOM MOTOR DRIVE
Q811,812
INVERTER
DTA144EK
Q805
PROTECT SWITCH
DTC144EK
Q816,817
LEVEL SHIFT
2SC1623
2SA812
Q818,822
BUFFER
IC804
MB88341PFV
EVR
IC803
MSM6219GS-VK
A/D CONV
Q809,810
AF SERIAL DATA SW
2SC3859
IC807
NJM3414M
IRIS DRIVE
Q825,826
PROTECTION DETECT
IC802
MC68HC05C4
AUTO FOCUS CPU
IC801
CXD1204R
AF PROCESSOR
IC807
NJM3414M
HALL AMP
Q827,828
HALL OS BUFFER
Q819,820,826
FOCUS SPEED CONT
2SB1132-T101
IC805
MPC1725MR
AUTO FOCUS MOTOR DRIVE
IC806
LM358PS
①②③ FOCUS SPEED
⑤⑥⑦ FOCUS FG AMP
Q824
INVERTER
DTC144
Q806,807
HPF
Q802
HALF WAVE RECT
Q801
DC BIAS
FL801
LPF
IC808
AD REF
Q803,804
AMP
XN6501
CN8
J STB
MOSI
SCK
GND
ZP
1V
2V
HALL
CB STB
COSMO CS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B
BLOCK

no mark : CAMERA REC mode

CV-9 BOARD (3/3) (CAMERA CONTROL BLOCK)

CAM


CN803
1 J STB
2 MOS1
3 SCK
4 GND
CHECK PIN
R846 220
R847 220
R848 220
Q818 2SC1623
Q822 2SA812
R872 10k
R860 39k
R861 10k
Q818, 822 BUFFER
R863 56k
R862 10k
C832 0.47 F
R879 1M
IC807
NJM3414M
IRIS DRIVE
R878 39k
R881 33k
IC807 NJM3414M (2/2)
C846 0.1 F
R880 100
CN801
1 ZOOM T
2 ZOOM W
3 FOCUS N
4 FOCUS ∞
5 FOCUS N
6 FOCUS ∞
7 ZP
8 1V
9 2V
10 DRIVE ⊕
11 GND
12 CONT ⊕
13 CONT ⊖
14 HALL ⊕
CL825
CL826
CL827
CL828
CL829
CL830
CL831
CL832
CL833
CL834
CL835
CL836
CL837
CL838
TO CD-10p BOARD W603
(See Page 87)
C822 0.01 F
RV801 220k
HALL
R887 10k
R883 1500
C827 0.01 F
R869 10k
R868 8200
CL 842
C830 0.1
IC807 NJM3414M (1/2)
IC807
NJM3414M
HALL AMP
R898 10k
R894 39k
Q825 DTC144WK
Q828 2SA812
Q827 2SC1623
R899 2700
Q827, 828
HALL OS BUFFER
R889 10k
Q819, 820, 826
FOCUS SPEED CONT
Q819 2SB1132-T101
R888 10k
C835 0.022 F
R874 68k
Q820 2SC1623
R875 1k
C839 0.01 B
IC805 MPC1725M
C2L CH2
C1H VPC
C1L VPOUT
VCC OUT2
VIN PGND
IN1 OUT1
IN2 INVP
INSET DGND
C836 0.01 B
C837 0.01 B
C843 10 16V
R876 150k
R882 15k
C841 0.022 B
C842 0.01 F
R890 5.6
IC805
MPC1725MR
AUTO FOCUS
MOTOR DRIVE
S SPEED
S FG AMP
R803 10k
IC808 LM358-T1
R804 10k
C849 0.47 F
IC808
AD REF

no mark : CAMERA REC mode

CV-9 BOARD (3/3) (CAMERA CONTROL BLOCK)

- Signal path

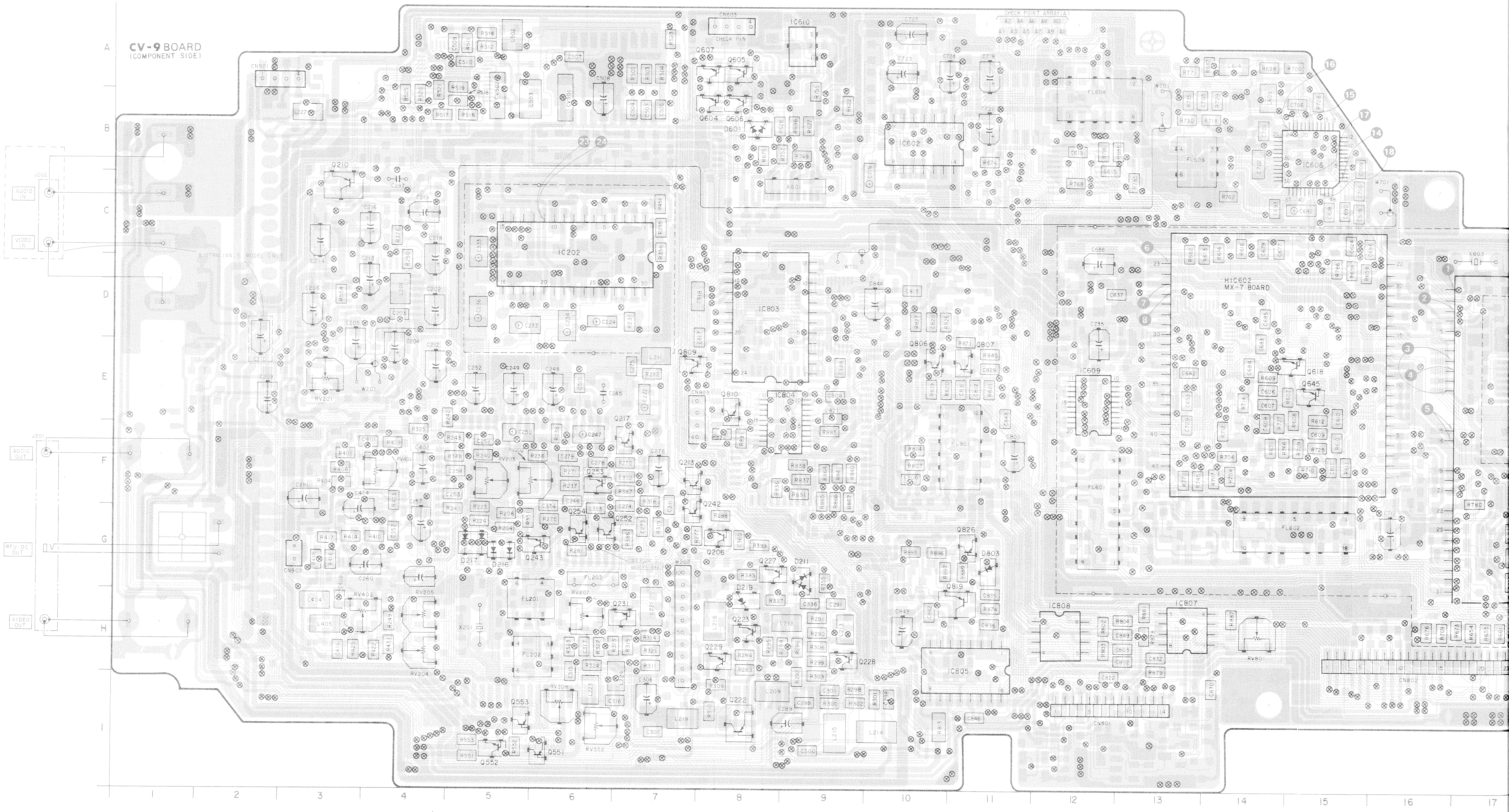
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC			⇛	
PB				

CV-9 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

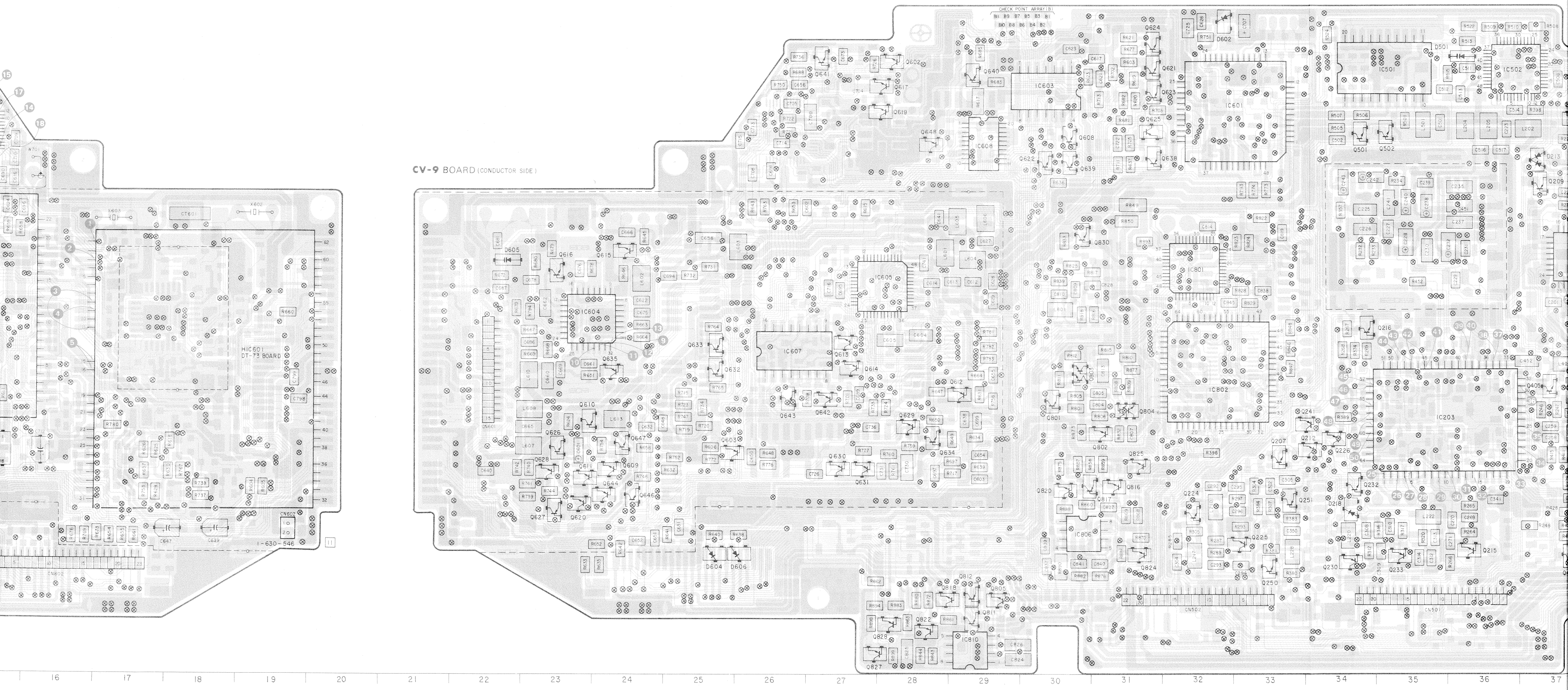
— Ref. No. CV-9 BOARD : 2000 series —

CV-9 BOARD

CN501	I-35
CN502	I-32
CN601	E-22
CN602	H-19
CN603	-A-8
CN801	I-12
CN802	H-16
CN803	E-7
CN901	A-2
CN902	G-3
CT601	C-18
CV501	B-16
CV502	B-5
D211	G-9
D213	C-37
D216	G-6
D217	G-5
D218	H-34
D219	H-8
D401	G-38
D501	A-36
D601	B-8
D602	A-32
D604	H-25
D605	D-22
D606	H-26
D803	G-11
IC201	D-37
IC202	D-6
IC203	F-35
IC501	A-35
IC502	A-36
IC601	B-32
IC602	B-10
IC603	B-30
IC604	E-23
IC605	D-28
IC606	B-15
IC607	E-26
IC608	B-29
IC609	E-12
IC610	A-9
IC801	D-32
IC802	F-32
IC803	D-8
IC804	E-8
IC805	E-11
IC806	H-30
IC807	H-13
IC808	H-12
IC810	I-29
Q202	B-38
Q203	E-39
Q204	F-39
Q206	G-8
Q207	G-33
Q208	B-37
Q209	C-37
Q210	C-3
Q211	E-38
Q212	G-34
Q213	F-7
Q215	H-36
Q216	E-34
Q217	F-7
Q222	I-8
Q223	H-8
Q224	H-32
Q225	H-33
Q226	G-34
Q227	G-8
Q228	H-9
Q229	H-8
Q230	H-34
Q231	H-7
Q232	G-34
Q233	H-35
Q241	F-34
Q242	F-7
Q243	G-6
Q244	E-38
Q250	H-33
Q251	G-33
Q252	G-6
Q253	F-6
Q254	G-6
Q401	F-38
Q403	F-38
Q405	F-37
Q406	G-37
Q407	G-38
Q408	G-38
Q409	H-38
Q410	H-37
Q501	B-34
Q502	B-35
Q551	I-6
Q552	I-5
Q553	I-5
Q602	A-28
Q603	G-25
Q604	B-8
Q605	A-8
Q606	B-8
Q607	A-8
Q608	B-30
Q609	G-24
Q610	E-23
Q611	G-23
Q612	F-29
Q613	E-27
Q614	F-27
Q615	D-24
Q616	D-23
Q617	D-28
Q618	E-15
Q619	B-28
Q620	H-23
Q621	A-31
Q622	C-30
Q623	B-31
Q624	A-31
Q625	B-31
Q626	G-23
Q627	H-23
Q628	G-23
Q629	F-28
Q630	G-27
Q631	G-27
Q632	F-25
Q633	E-25
Q634	G-28
Q635	E-24
Q638	C-31
Q639	C-30
Q640	A-29
Q641	A-27
Q642	F-27
Q643	F-26
Q644	G-24
Q645	E-15
Q646	G-24
Q647	G-24
Q648	B-28
Q801	F-30
Q802	G-31
Q803	F-30
Q804	F-31
Q805	I-29
Q806	E-10
Q807	E-11
Q809	E-7
Q810	E-8
Q811	I-29
Q812	I-29
Q816	G-31
Q817	G-30
Q818	I-29
Q819	H-11
Q820	G-30
Q822	I-28
Q824	H-31
Q825	G-31
Q826	G-11
Q827	I-27
Q828	I-28
Q830	D-30
RV201	E-3
RV202	F-5
RV203	F-5
RV204	H-4
RV205	H-4
RV207	H-6
RV208	I-6
RV401	F-4
RV402	H-4
RV552	I-6
RV801	H-14
W202	H-7
W901	G-39
W902	C-39


CV-9 BOARD
(COMPONENT SIDE)
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
AUDIO IN
VIDEO IN
AUDIO OUT
RFU DC OUT
VIDEO OUT
IC202
IC803
IC804
IC602
IC606
IC609
IC805
IC807
IC808
HIC602
MX-7 BOARD
FL202
FL203
FL601
FL602
FL604
FL605
CN601
CN801
CN802
CN901
CN902
CHECK PIN
CHECK POINT ARRAY(A)

CV-9 BOARD (CONDUCTOR SIDE)


HIC601
DT-73 BOARD
1-630-546
CN602
CN802
CT601
X602
D603
CHECK POINT ARRAY (B)
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2
IC601
IC603
IC604
IC605
IC607
IC608
IC501
IC502
IC801
IC802
IC806
IC810
IC203
CN502
CN501
D605
D604
D606
D602
D501
16
17
18
19
20
21
22
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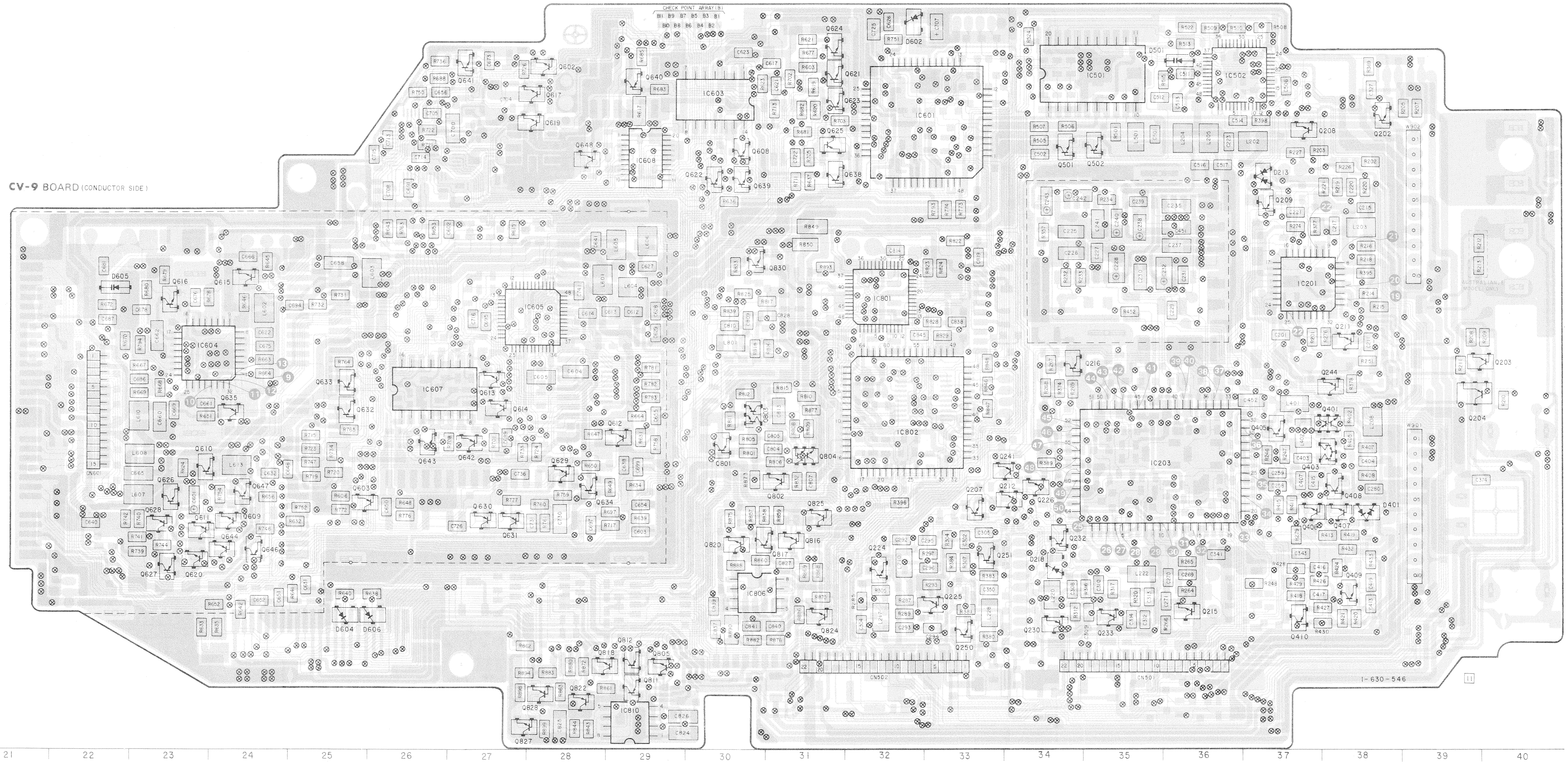
37

CV-9 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY(B)
IC501
IC502
IC601
IC603
IC604
IC605
IC606
IC607
IC608
IC201
IC203
IC801
IC802
IC806
IC810
CN502
CN501
CN601
1-630-546
AUSTRALIAN MODEL(AN)
21
22
23
24
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26
27
28
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32
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36
37
38
39
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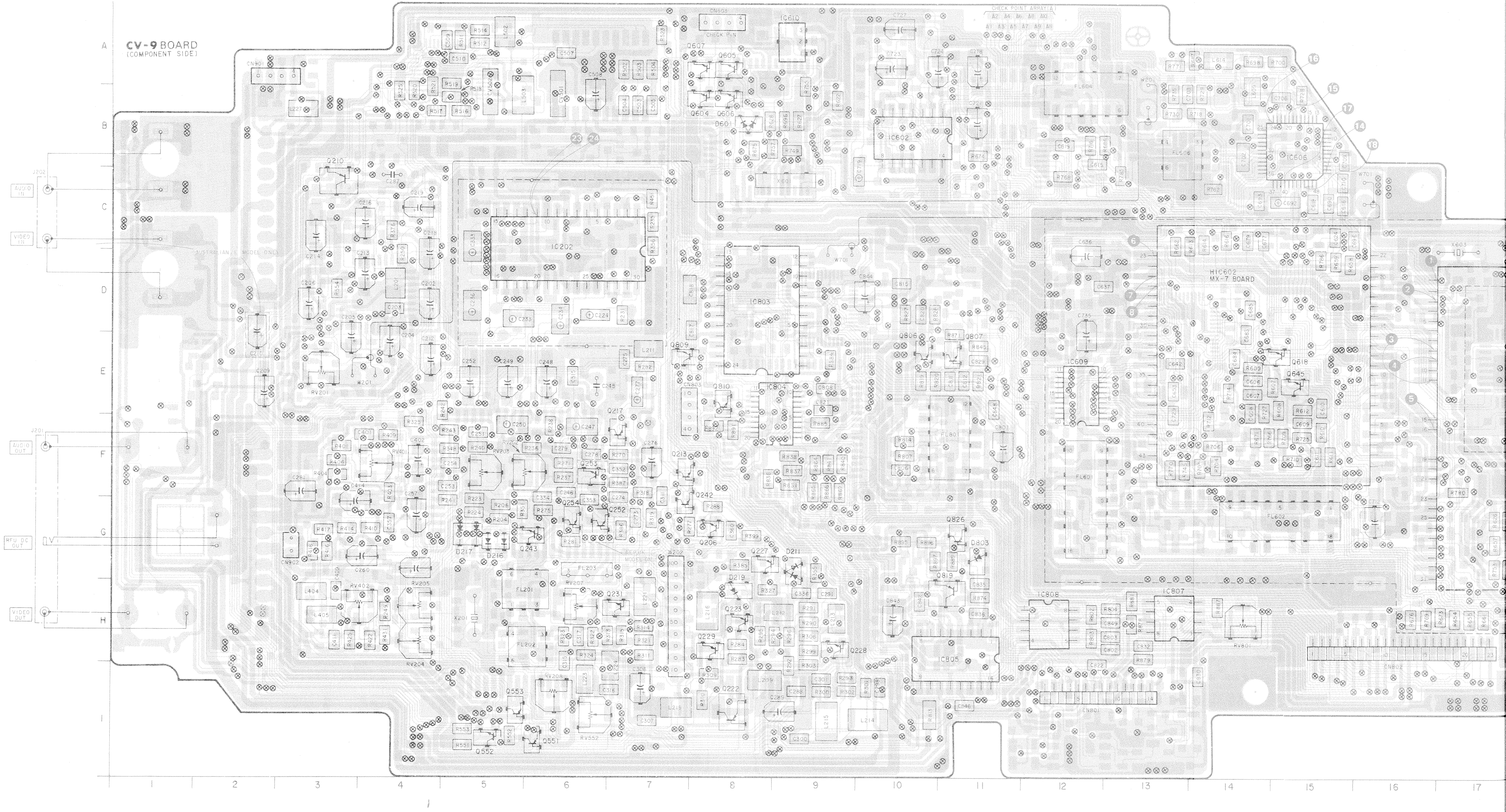
CV-9 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

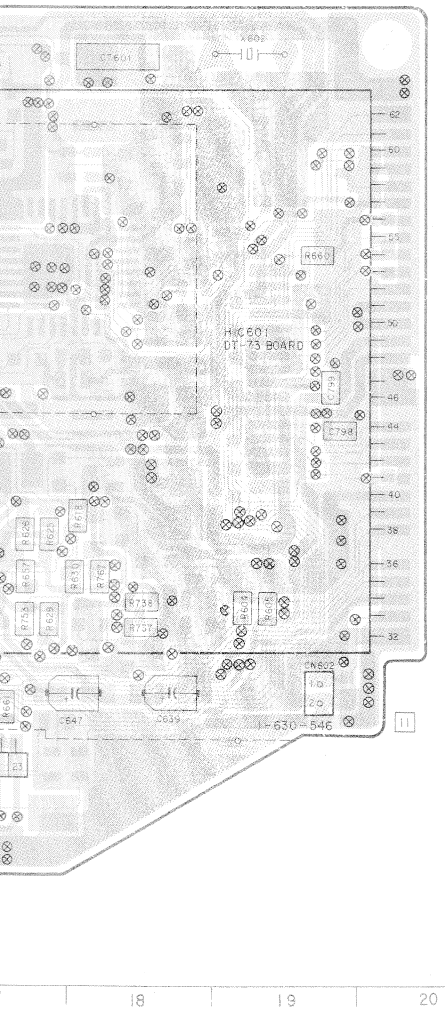
— Ref. No. CV-9 BOARD : 2000 series —

CV-9 BOARD

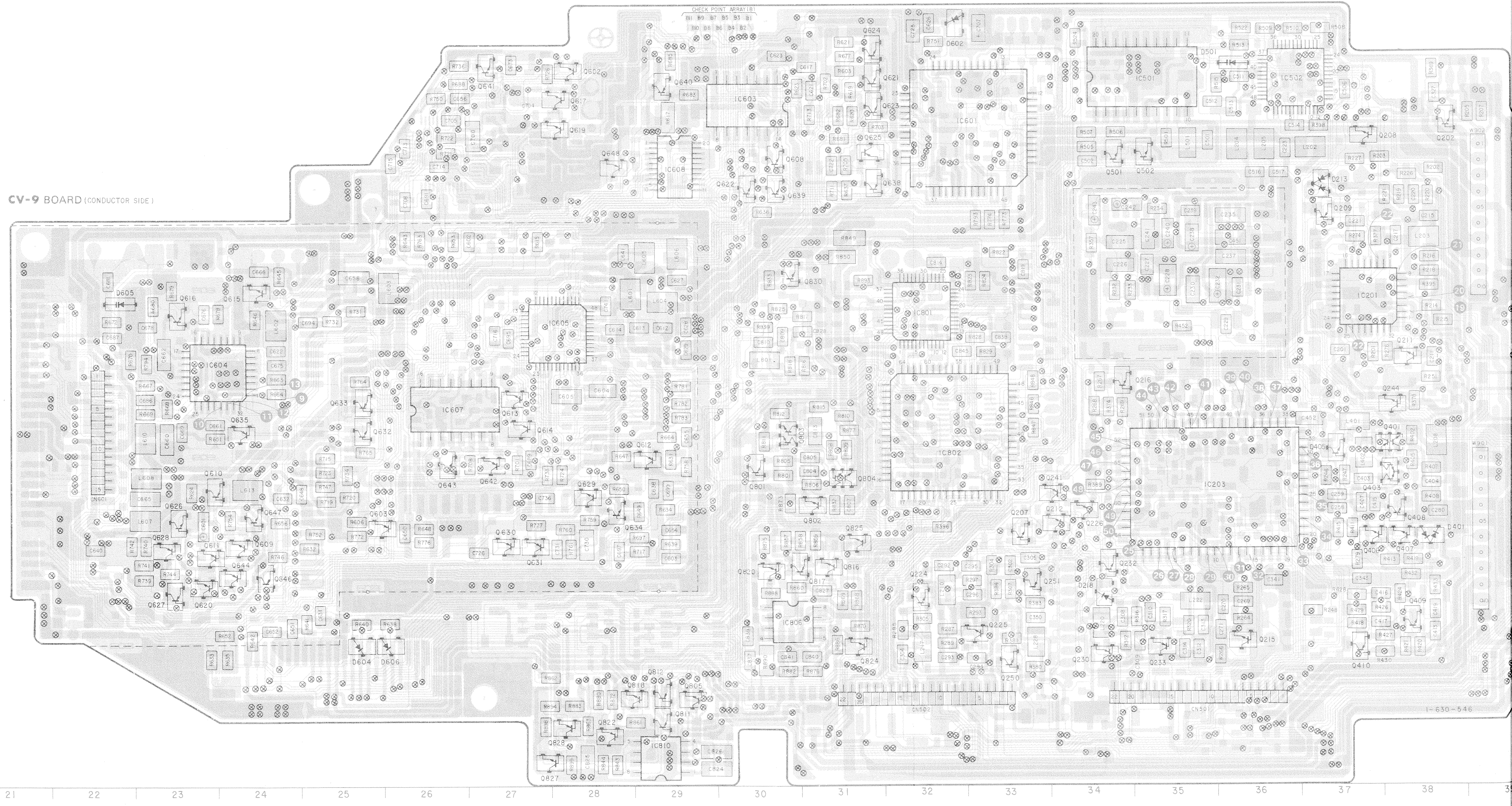
CN501	I-35
CN502	I-32
CN601	E-22
CN602	H-19
CN603	-A-8
CN801	I-12
CN802	H-16
CN803	E-7
CN901	A-2
CN902	G-3
CT601	C-18
CV501	B-16
CV502	B-5
D211	G-9
D213	C-37
D216	G-6
D217	G-5
D218	H-34
D219	H-8
D401	G-38
D501	A-36
D601	B-8
D602	A-32
D604	H-25
D605	D-22
D606	H-26
D803	G-11
IC201	D-37
IC202	D-6
IC203	F-35
IC501	A-35
IC502	A-36
IC601	B-32
IC602	B-10
IC603	B-30
IC604	E-23
IC605	D-28
IC606	B-15
IC607	E-26
IC608	B-29
IC609	E-12
IC610	A-9
IC801	D-32
IC802	F-32
IC803	D-8
IC804	E-8
IC805	E-11
IC806	H-30
IC807	H-13
IC808	H-12
IC810	I-29
Q202	B-38
Q203	E-39
Q204	F-39
Q206	G-8
Q207	G-33
Q208	B-37
Q209	C-37
Q210	C-3
Q211	E-38
Q212	G-34
Q213	F-7
Q215	H-36
Q216	E-34
Q217	F-7
Q222	I-8
Q223	H-8
Q224	H-32
Q225	H-33
Q226	G-34
Q227	G-8
Q228	H-9
Q229	H-8
Q230	H-34
Q231	H-7
Q232	G-34
Q233	H-35
Q241	F-34
Q242	F-7
Q243	G-6
Q244	E-38
Q250	H-33
Q251	G-33
Q252	G-6
Q253	F-6
Q254	G-6
Q401	F-38
Q403	F-38
Q405	F-37
Q406	G-37
Q407	G-38
Q408	G-38
Q409	H-38
Q410	H-37
Q501	B-34
Q502	B-35
Q551	I-6
Q552	I-5
Q553	I-5
Q602	A-28
Q603	G-25
Q604	B-8
Q605	A-8
Q606	B-8
Q607	A-8
Q608	B-30
Q609	G-24
Q610	E-23
Q611	G-23
Q612	F-29
Q613	E-27
Q614	F-27
Q615	D-24
Q616	D-23
Q617	D-28
Q618	E-15
Q619	B-28
Q620	H-23
Q621	A-31
Q622	C-30
Q623	B-31
Q624	A-31
Q625	B-31
Q626	G-23
Q627	H-23
Q628	G-23
Q629	F-28
Q630	G-27
Q631	G-27
Q632	F-25
Q633	E-25
Q634	G-28
Q635	E-24
Q638	C-31
Q639	C-30
Q640	A-29
Q641	A-27
Q642	F-27
Q643	F-26
Q644	G-24
Q645	E-15
Q646	G-24
Q647	G-24
Q648	B-28
Q801	F-30
Q802	G-31
Q803	F-30
Q804	F-31
Q805	I-29
Q806	E-10
Q807	E-11
Q809	E-7
Q810	E-8
Q811	I-29
Q812	I-29
Q816	G-31
Q817	G-30
Q818	I-29
Q819	H-11
Q820	G-30
Q822	I-28
Q824	H-31
Q825	G-31
Q826	G-11
Q827	I-27
Q828	I-28
Q830	D-30
RV201	E-3
RV202	F-5
RV203	F-5
RV204	H-4
RV205	H-4
RV207	H-6
RV208	I-6
RV401	F-4
RV402	H-4
RV552	I-6
RV801	H-14
W202	H-7
W901	G-39
W902	C-39


CV-9 BOARD
(COMPONENT SIDE)
AUDIO IN
VIDEO IN
AUDIO OUT
RFU DC OUT
VIDEO OUT
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
IC202
IC602
IC606
IC610
IC803
IC804
IC805
IC807
IC808
IC609
H1C602
MX-7 BOARD
FL201
FL202
FL203
FL601
FL602
FL604
CN901
CN902
CN603
CN801
CN802
CHECK PINS
CHECK POINT ARRAY

CV-9 BOARD (CONDUCTOR SIDE)



CT601
X602
HIC601
DT-73 BOARD
CN602
1-630-546
18
19
20



CHECK POINT ARRAY(B)
IC603
IC601
IC501
IC502
IC604
IC605
IC606
IC607
IC608
IC801
IC802
IC203
IC201
IC806
IC810
CN601
CN502
CN501
Q602
Q624
Q501
Q502
Q208
Q202
Q209
D213
Q804
Q802
Q801
Q830
D604
D606
D401
1-630-546
21
22
23
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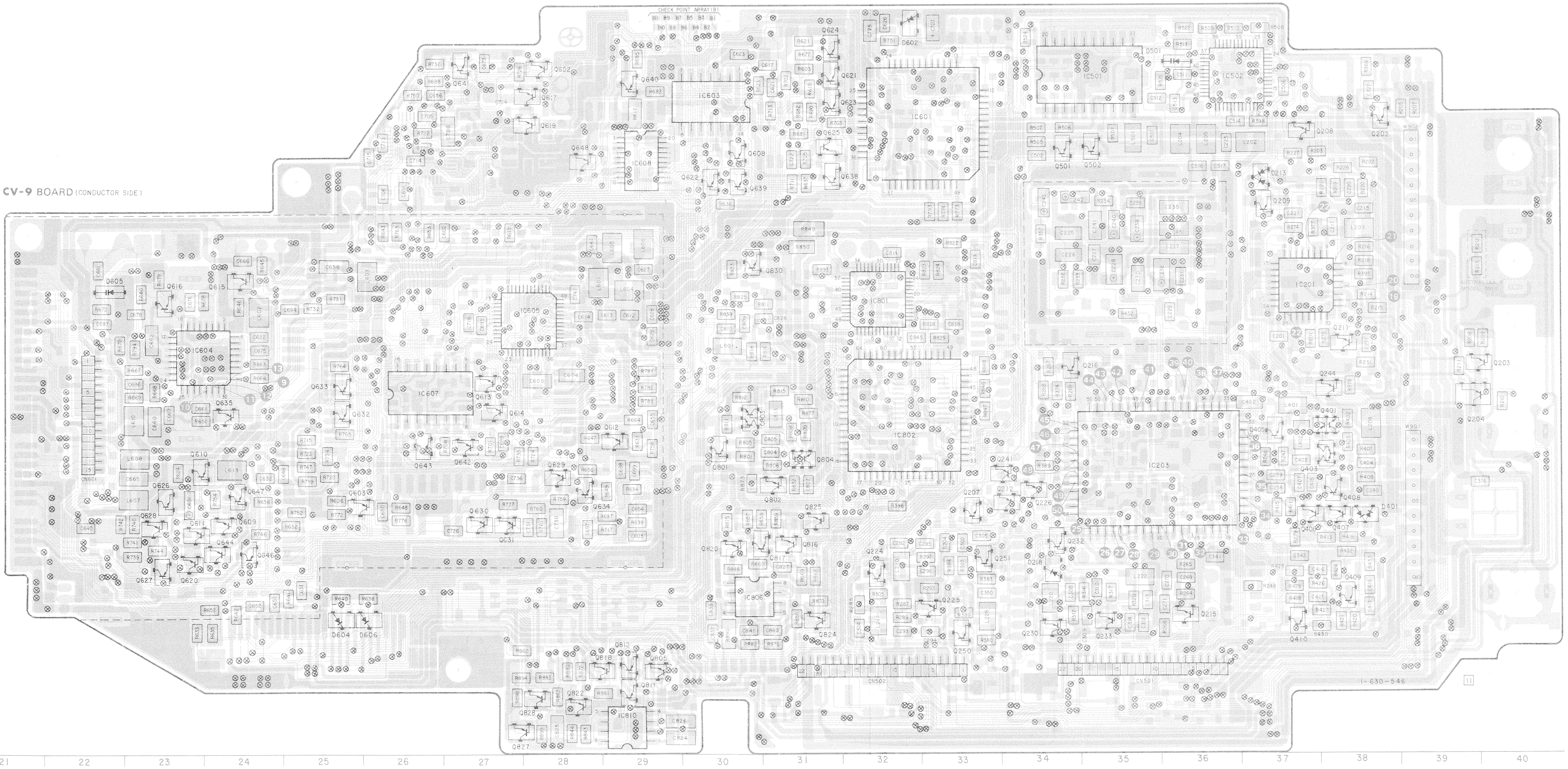
37
38

VIDEO VIDEO

CV-9 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC603
IC601
IC501
IC502
IC608
IC605
IC604
IC607
IC801
IC802
IC201
IC203
IC806
IC810
CN601
CN502
CN501
1-630-546
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24
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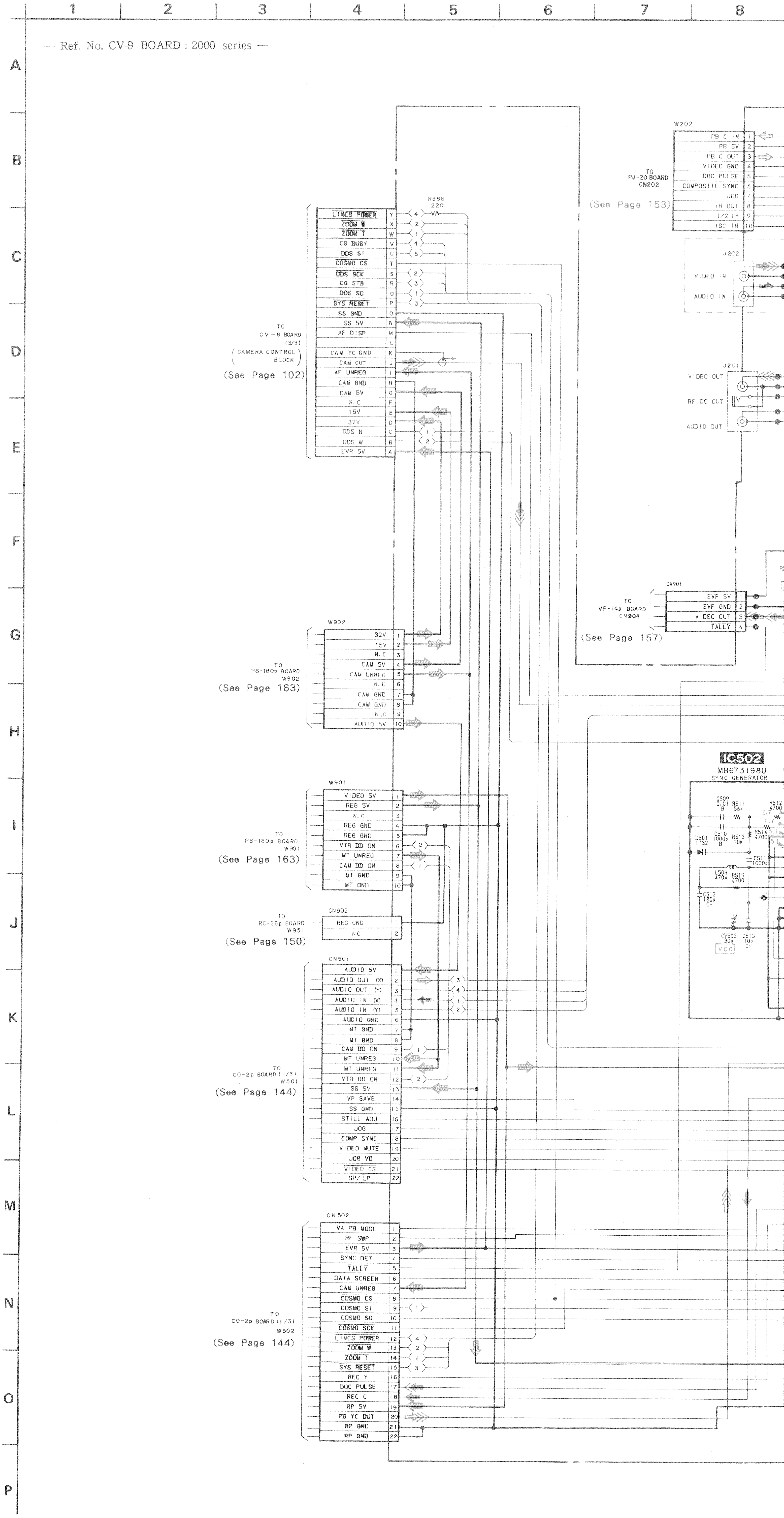
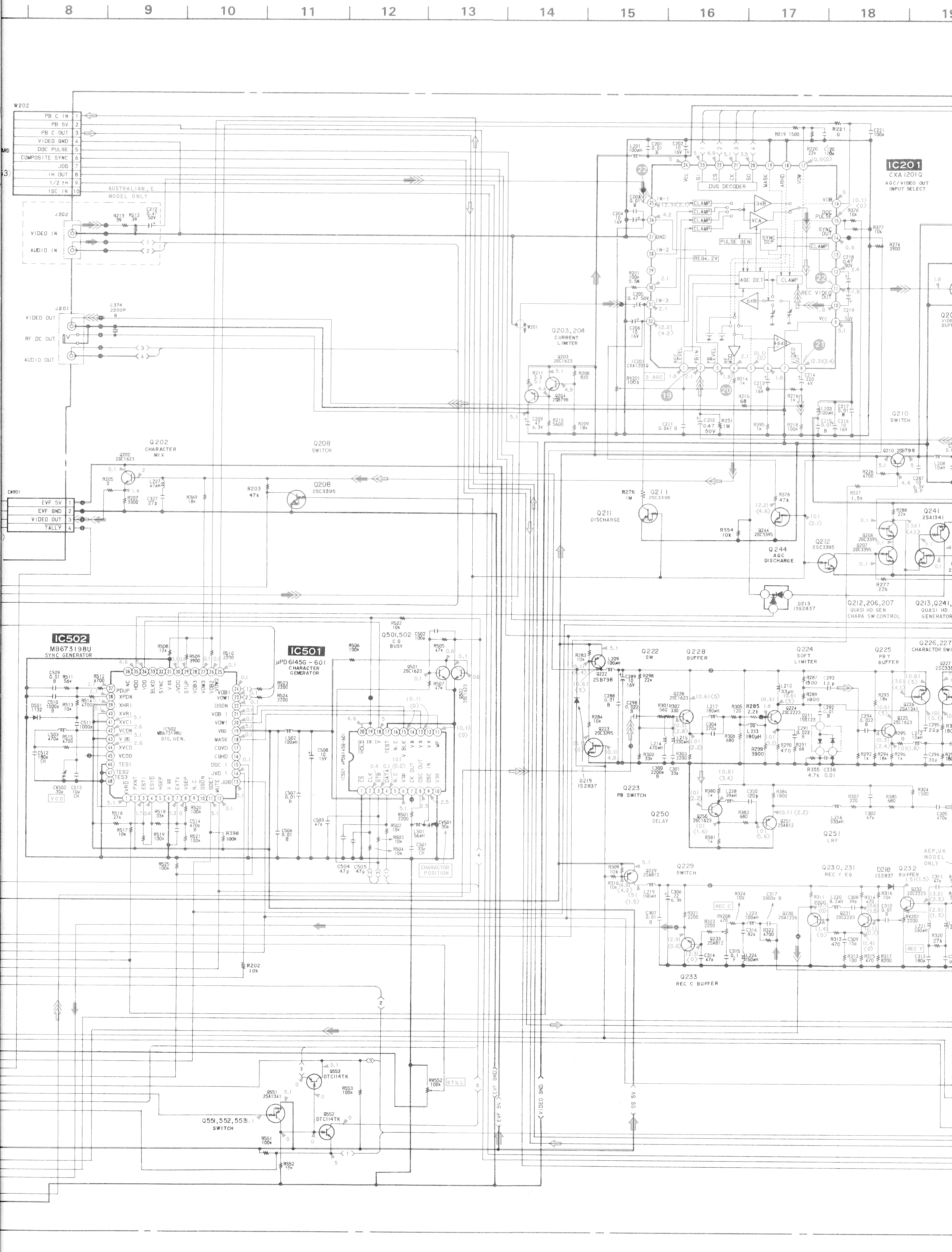
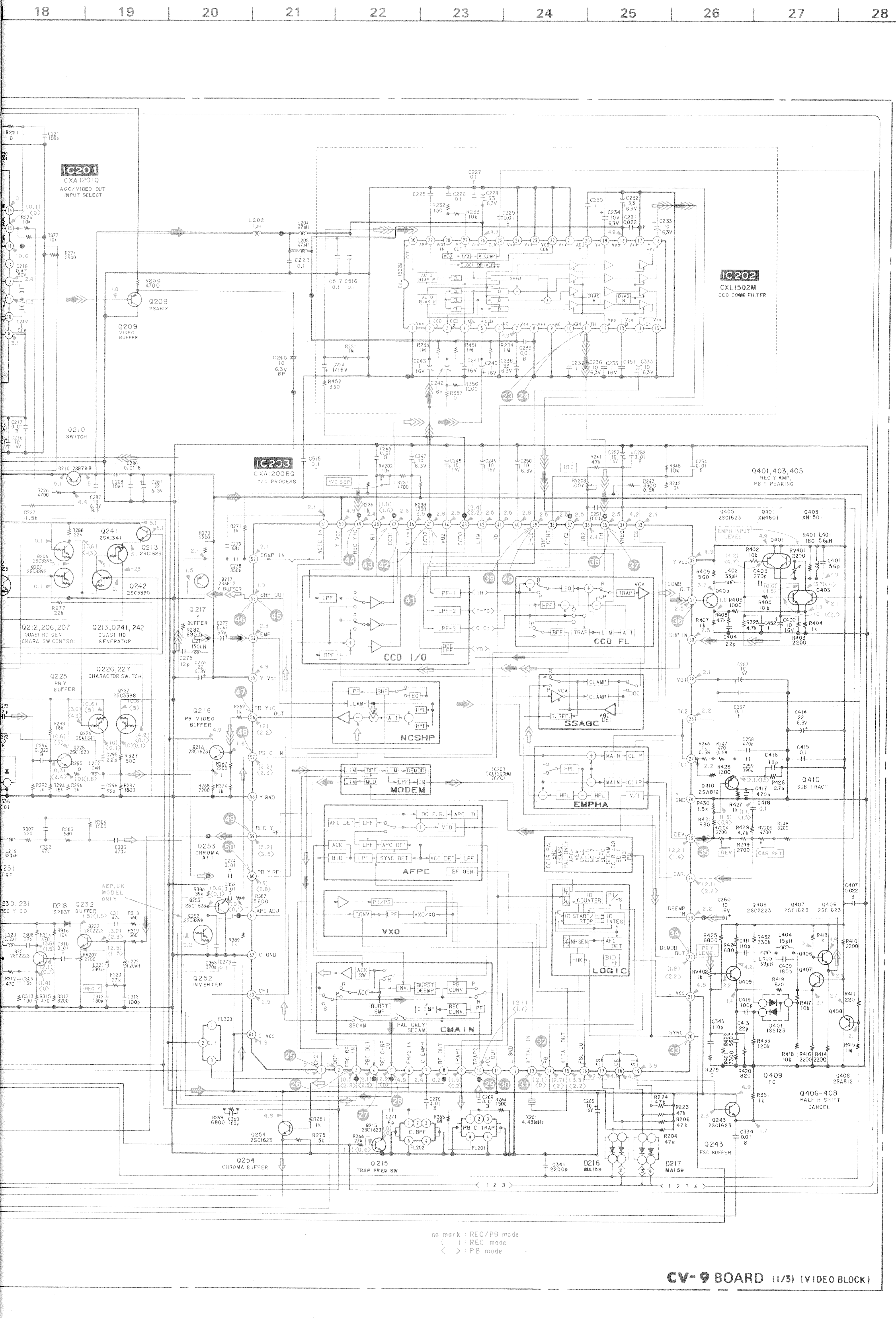
CV-9 (VIDEO PROCESS) SCHEMATIC DIAGRAMS

— Ref. No. CV-9 BOARD : 2000 series —

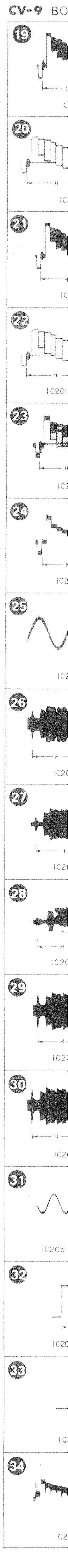

1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
TO CV-9 BOARD (3/3) (CAMERA CONTROL BLOCK)
(See Page 102)
LINCS POWER Y
ZOOM W X
ZOOM T W
CG BUSY V
DDS SI U
COSMO CS T
DDS SCK S
CG STB R
DDS SO Q
SYS RESET P
SS GND O
SS 5V N
AF DISP M
L
CAM YC GND K
CAM OUT J
AF UNREG I
CAM GND H
CAM 5V G
N.C F
15V E
32V D
DDS B C
DDS W B
EVR 5V A
R396 220
W202
PB C IN 1
PB 5V 2
PB C OUT 3
VIDEO GND 4
DOC PULSE 5
COMPOSITE SYNC 6
JOG 7
1H OUT 8
1/2 fH 9
fSC IN 10
TO PJ-20 BOARD CN202
(See Page 153)
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RF DC OUT
AUDIO OUT
CN901
EVF 5V 1
EVF GND 2
VIDEO OUT 3
TALLY 4
TO VF-14p BOARD CN904
(See Page 157)
W902
32V 1
15V 2
N.C 3
CAM 5V 4
CAM UNREG 5
N.C 6
CAM GND 7
CAM GND 8
N.C 9
AUDIO 5V 10
TO PS-180p BOARD W902
(See Page 163)
W901
VIDEO 5V 1
REG 5V 2
N.C 3
REG GND 4
REG GND 5
VTR DD ON 6
MT UNREG 7
CAM DD ON 8
MT GND 9
MT GND 10
TO PS-180p BOARD W901
(See Page 163)
CN902
REG GND 1
NC 2
TO RC-26p BOARD W951
(See Page 150)
CN501
AUDIO 5V 1
AUDIO OUT (X) 2
AUDIO OUT (Y) 3
AUDIO IN (X) 4
AUDIO IN (Y) 5
AUDIO GND 6
MT GND 7
MT GND 8
CAM DD ON 9
MT UNREG 10
MT UNREG 11
VTR DD ON 12
SS 5V 13
VP SAVE 14
SS GND 15
STILL ADJ 16
JOG 17
COMP SYNC 18
VIDEO MUTE 19
JOG VD 20
VIDEO CS 21
SP/LP 22
TO CO-2p BOARD (1/3) W501
(See Page 144)
CN502
VA PB MODE 1
RF SWP 2
EVR 5V 3
SYNC DET 4
TALLY 5
DATA SCREEN 6
CAM UNREG 7
COSMO CS 8
COSMO SI 9
COSMO SO 10
COSMO SCK 11
LINCS POWER 12
ZOOM W 13
ZOOM T 14
SYS RESET 15
REC Y 16
DOC PULSE 17
REC C 18
RP 5V 19
PB YC OUT 20
RP GND 21
RP GND 22
TO CO-2p BOARD (1/3) W502
(See Page 144)
IC502
MB673198U
SYNC GENERATOR
C509 0.01 B
R511 56k
C510 1000p B
R513 10k
R514 4700
D501 1T32
C511 1000p
L503 470μ
R515 4700
C512 180p CH
CV502 30p
C513 10p CH
VCO


8
9
10
11
12
13
14
15
16
17
18
19
W202
PB C IN
PB 5V
PB C OUT
VIDEO GND
DOC PULSE
COMPOSITE SYNC
JOG
1H OUT
1/2 1H
1SC IN
AUSTRALIAN, E MODEL ONLY
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RF DC OUT
AUDIO OUT
CN901
EVF 5V
EVF GND
VIDEO OUT
TALLY
Q202 CHARACTER MIX
Q208 SWITCH
Q203,204 CURRENT LIMITER
Q211 DISCHARGE
Q244 AGC DISCHARGE
Q210 SWITCH
Q212,206,207 QUASI HD GEN CHARA SW CONTROL
Q213,Q241, QUASI HD GENERATOR
IC201
CXA1201Q
AGC/VIDEO OUT INPUT SELECT
DUS DECODER
CLAMP
3dB
VCA
SYNC SEP
PULSE GEN
REG4.2V
AGC DET
6dB
REC VIDEO OUT
IC502
MB673198U
SYNC GENERATOR
IC501
μPD6145G-601
CHARACTER GENERATOR
Q501,502 CG BUSY
CHARACTOR POSITION
Q222 SW
Q228 BUFFER
Q224 SOFT LIMITER
Q225 PB Y BUFFER
Q226,227 CHARACTOR SW
Q223 PB SWITCH
Q250 DELAY
Q251 LRF
Q229 SWITCH
Q230,231 REC Y EQ
D218
Q232 BUFFER
AEP,UK MODEL ONLY
Q233 REC C BUFFER
REC C
REC Y
Q551,552,553 SWITCH
RV552 STILL
EVF GND
EVF 5V
VIDEO GND
SS 5V


18
19
20
21
22
23
24
25
26
27
28
29
IC201
CXA1201Q
AGC/VIDEO OUT
INPUT SELECT
IC202
CXL1502M
CCD COMB FILTER
IC203
CXA1200BQ
Y/C PROCESS
Q209
VIDEO
BUFFER
Q210
SWITCH
Q212,206,207
QUASI HD GEN
CHARA SW CONTROL
Q213,Q241,242
QUASI HD
GENERATOR
Q225
PB Y
BUFFER
Q226,227
CHARACTOR SWITCH
Q217
Y
BUFFER
Q216
PB VIDEO
BUFFER
Q253
CHROMA
ATT
Q252
INVERTER
Q254
CHROMA BUFFER
Q215
TRAP FREQ SW
Q243
FSC BUFFER
Q401,403,405
REC Y AMP,
PB Y PEAKING
Q410
SUB TRACT
Q409
EQ
Q406-408
HALF H SHIFT
CANCEL
D216
MA159
D217
MA159
X201
4.43MHz
FL201
FL202
FL203
CCD I/O
CCD FL
SSAGC
NCSHP
MODEM
EMPHA
AFPC
VXO
LOGIC
CMAIN
AEP,UK
MODEL
ONLY

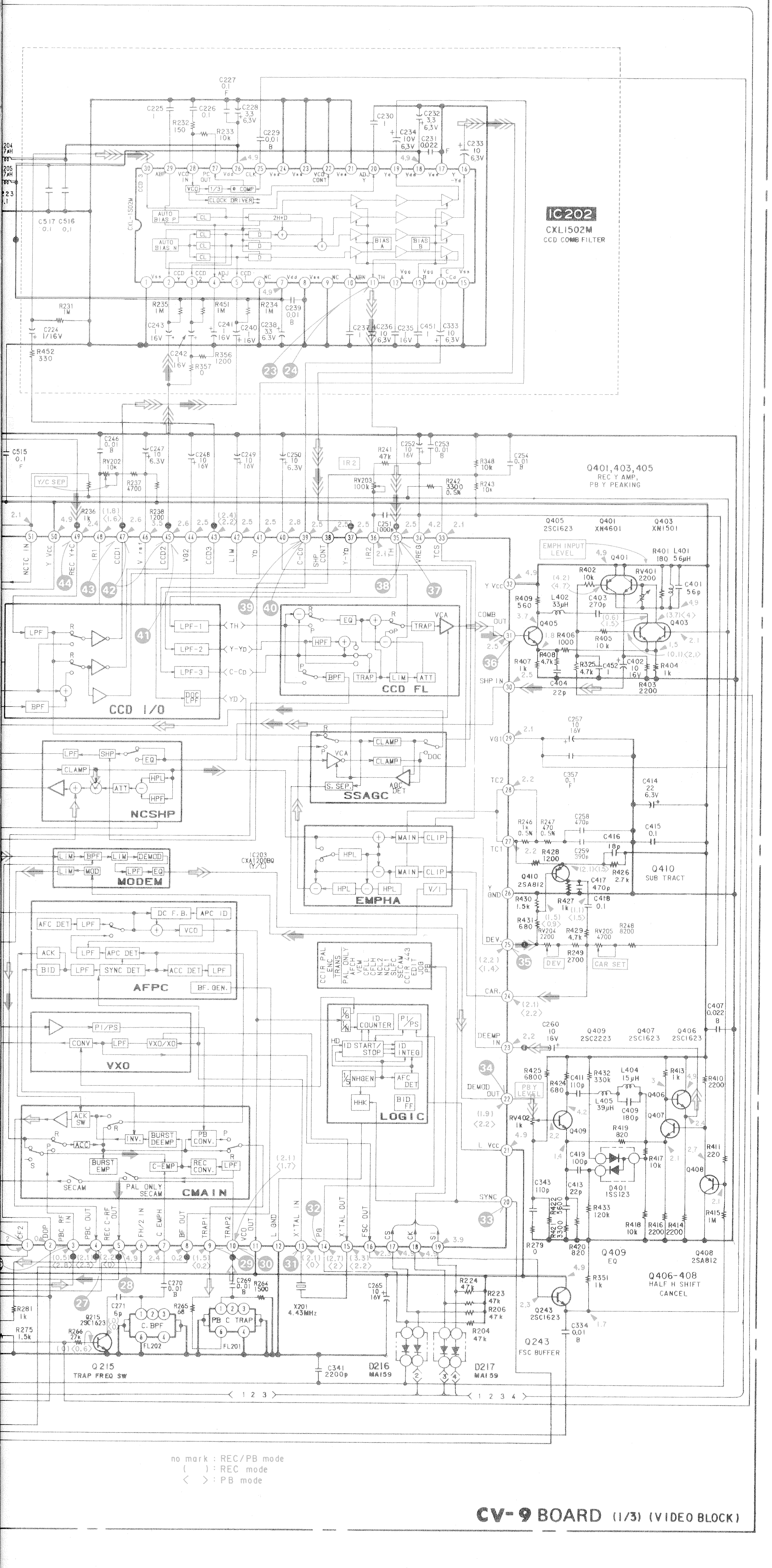
no mark : REC/PB mode
( ) : REC mode
< > : PB mode

CV-9 BOARD (1/3) (VIDEO BLOCK)



• Signal p

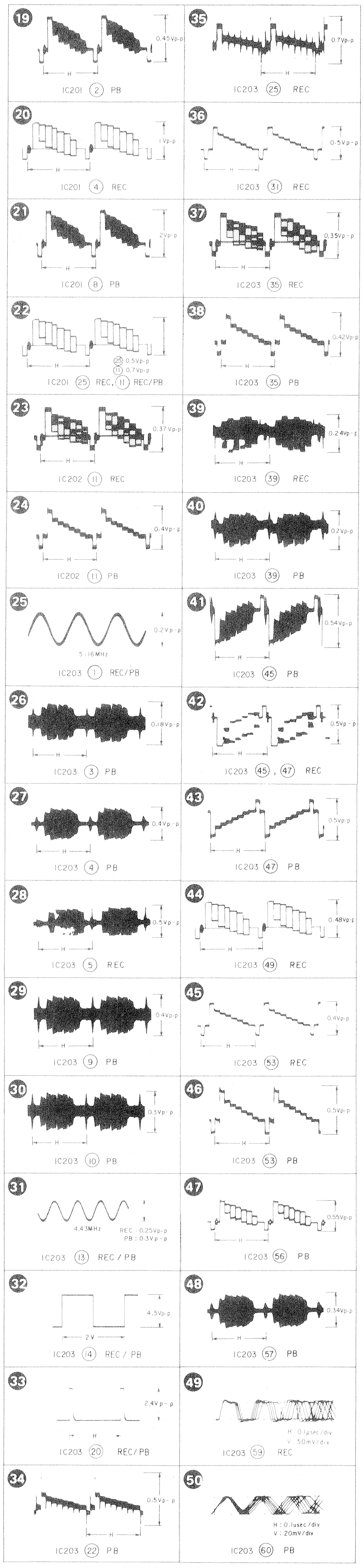
	CH
REC	
PB	


IC202
CXL1502M
CCD COMB FILTER
Q401,403,405
REC Y AMP,
PB Y PEAKING
Q405 2SC1623
Q401 XN4601
Q403 XN1501
EMPH INPUT LEVEL
CCD I/O
CCD FL
NCSHP
SSAGC
MODEM
EMPHA
AFPC
VXO
LOGIC
CMAIN
IC203
CXA1200BQ
(Y/C)
Q410
SUB TRACT
Q410 2SA812
DEV
CAR SET
PB Y LEVEL
Q409 2SC2223
Q407 2SC1623
Q406 2SC1623
Q409
EQ
Q406-408
HALF H SHIFT
CANCEL
Q408 2SA812
Q243 2SC1623
Q243
FSC BUFFER
Q215 2SC1623
Q215
TRAP FREQ SW
X201 4.43MHz
D216 MA159
D217 MA159
FL202 C.BPF
FL201 PB C TRAP
D401 1SS123

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

CV-9 BOARD (1/3) (VIDEO BLOCK)

CV-9 BOARD (VIDEO)



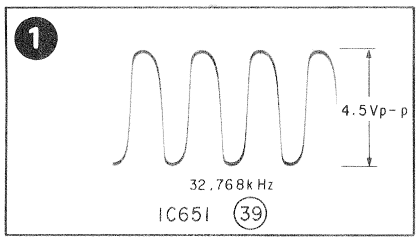
- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

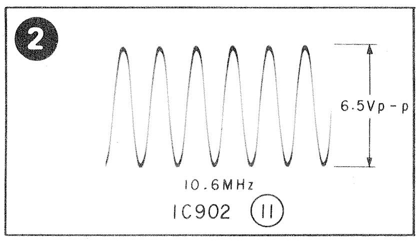
LI-10 (RELAY), CK-8P (TITLE CONTROL, CAMERA FUNCTION SWITCH), DK-2P (EDIT SEARCH SWITCH) PRINTED WIRING BOARDS

— Ref. No. LI-10 BOARD : 3000 series, CK-8P BOARD : 4000 series, DK-2P BOARD : 5000 series —

CK-8P BOARD

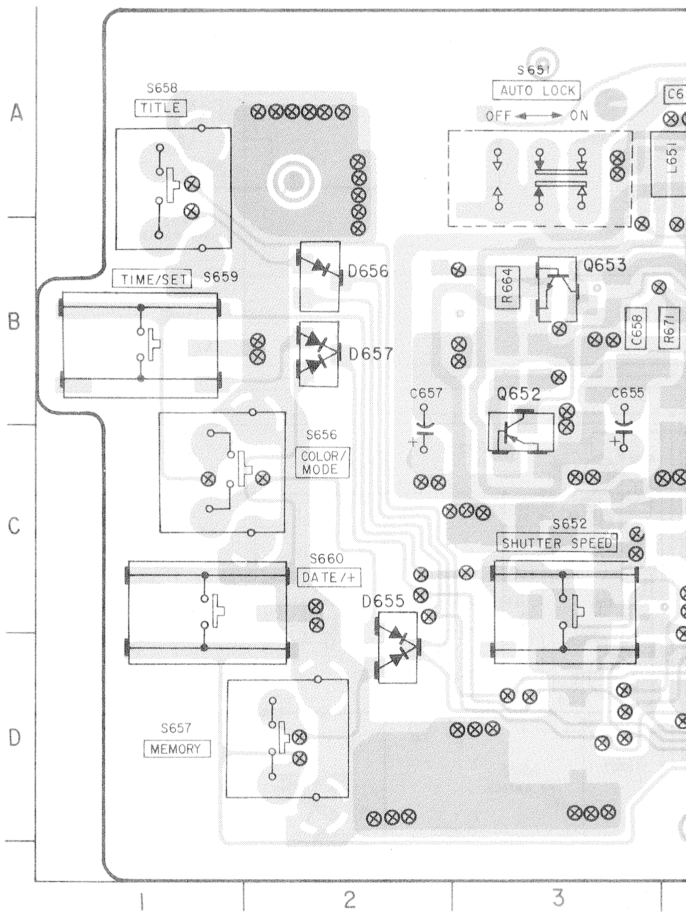


LI-10 BOARD



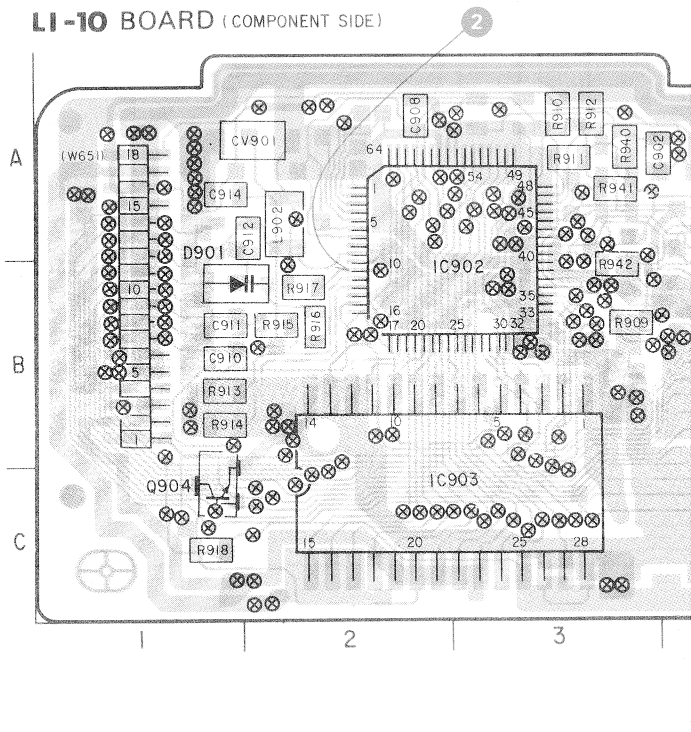
CK-8P	BOARD
CV651	B-4
D651	B-12
D652	C-11
D653	C-8
D654	C-6
D655	D-2
D656	B-2
D657	B-2
IC651	B-5
Q651	A-9
Q652	B-3
Q653	B-3
Q654	C-12
Q655	B-9
Q656	B-11
Q657	B-11
Q658	C-12
Q659	C-10
Q660	C-4
Q661	C-11
Q662	A-10
Q663	A-9
Q664	A-4
RV651	B-6
W651	A-10
W652	D-5

CK-8P BOARD (COMPONENT SIDE)

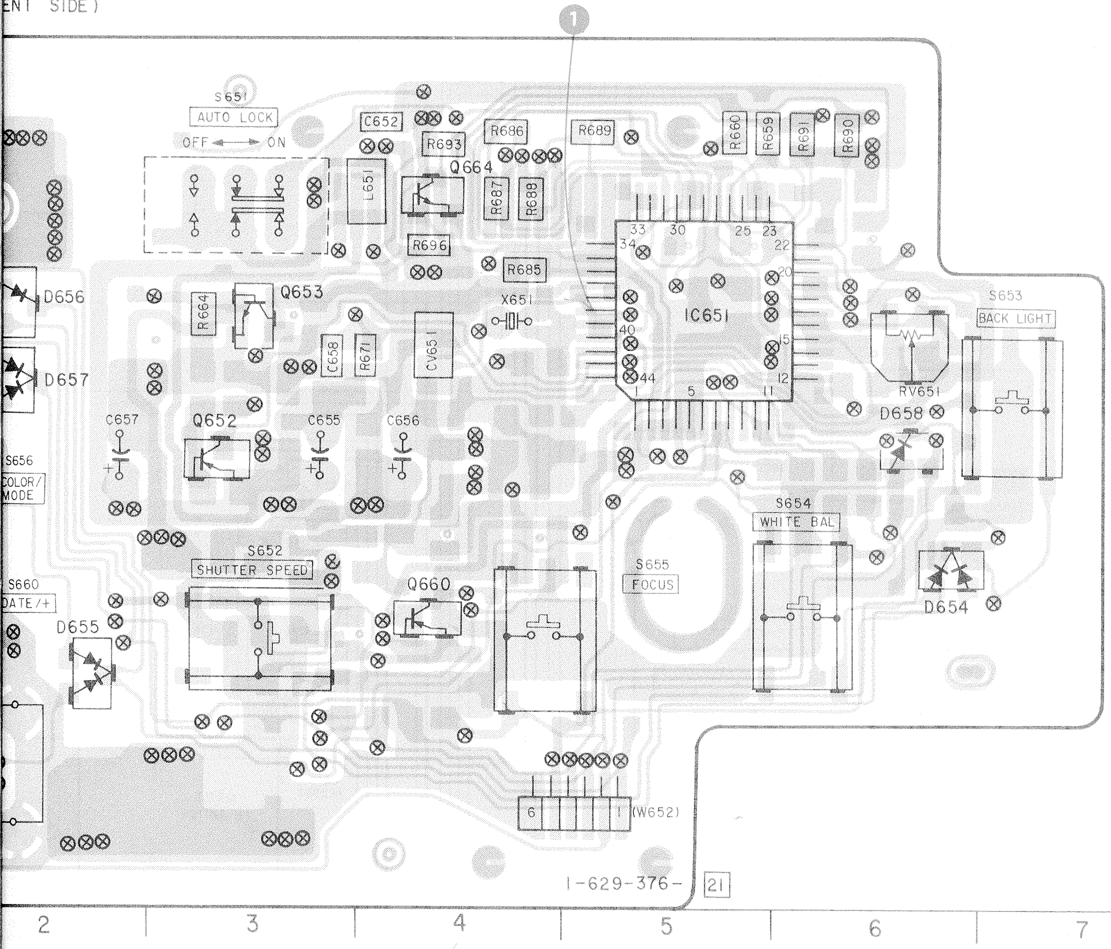

A
B
C
D
1
2
3
S658
TITLE
S651
AUTO LOCK
OFF ◄—► ON
L651
TIME/SET
S659
D656
D657
Q653
R664
C658
R671
C657
Q652
C655
S656
COLOR/MODE
S652
SHUTTER SPEED
S660
DATE/+
D655
S657
MEMORY

LI-10	BOARD
CV901	A-2
D901	B-1
IC901	B-5
IC902	A-3
IC903	C-2
Q901	A-6
Q902	B-6
Q903	A-5
Q904	C-1
W651	A-1
W802	A-4

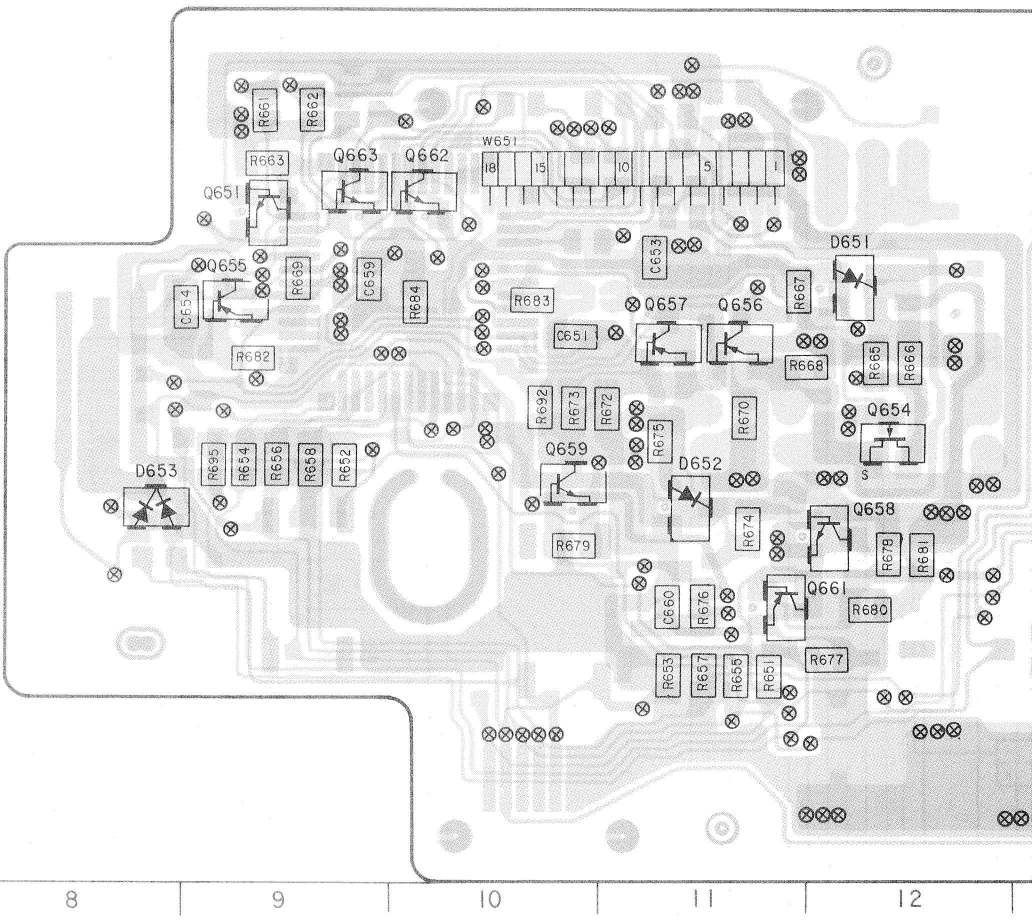
LI-10 BOARD (COMPONENT SIDE)


❷
A
B
C
1
2
3
(W651)
18
15
10
5
1
CV901
C908
R910
R912
R911
R940
C902
R941
C914
L902
C912
D901
IC902
64
54
49
48
45
40
35
33
32
30
25
20
17
16
10
5
1
R942
R917
R916
R915
C911
C910
R909
R913
R914
Q904
IC903
14
10
5
1
15
20
25
28
R918

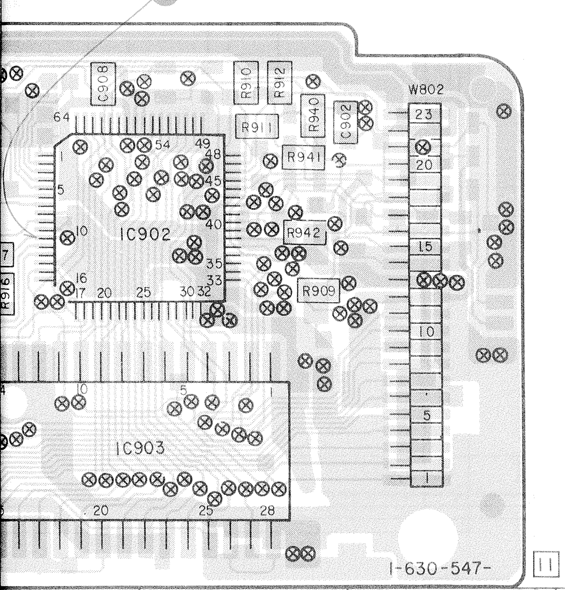
ENT SIDE)


①
S651
AUTO LOCK
OFF ON
C652
R693
R686
R689
R660
R659
R691
R690
L651
Q664
R687
R688
R696
R685
IC651
33
30
25
23
22
34
20
40
15
44
1
5
12
11
X651
D656
D657
R664
Q653
C658
R671
CV651
S653
BACK LIGHT
RV651
D658
C657
Q652
C655
C656
S656
COLOR/
MODE
S660
DATE/+
D655
S652
SHUTTER SPEED
Q660
S655
FOCUS
S654
WHITE BAL
D654
6
1
(W652)
1-629-376-
21
2
3
4
5
6
7

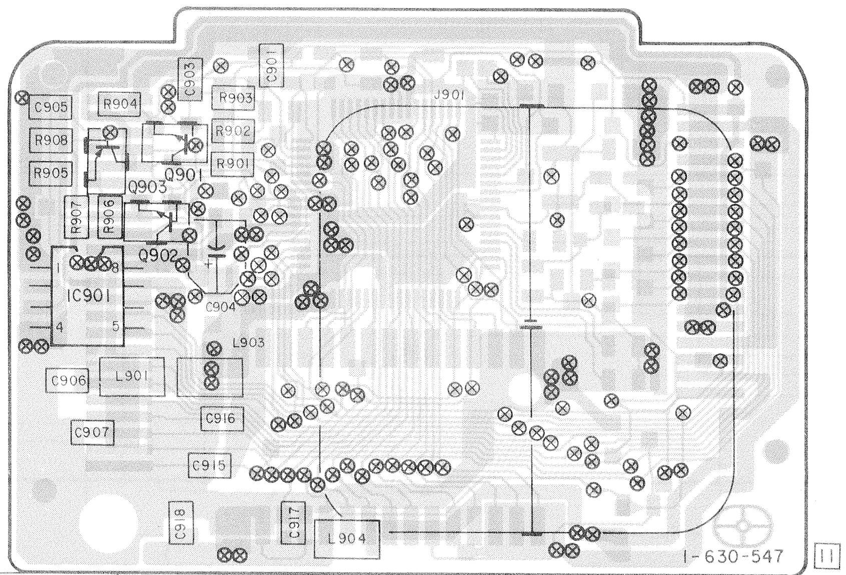
CK-8P BOARD (CONDUCTOR SIDE)


R661
R662
W651
18
15
10
5
1
R663
Q663
Q662
Q651
Q655
C654
R669
C659
R684
C653
D651
R683
Q657
Q656
R667
C651
R682
R668
R665
R666
R692
R673
R672
R670
Q654
R675
Q659
D652
D653
R695
R654
R656
R658
R652
R679
R674
Q658
R678
R681
C660
R676
Q661
R680
R653
R657
R655
R651
R677
8
9
10
11
12

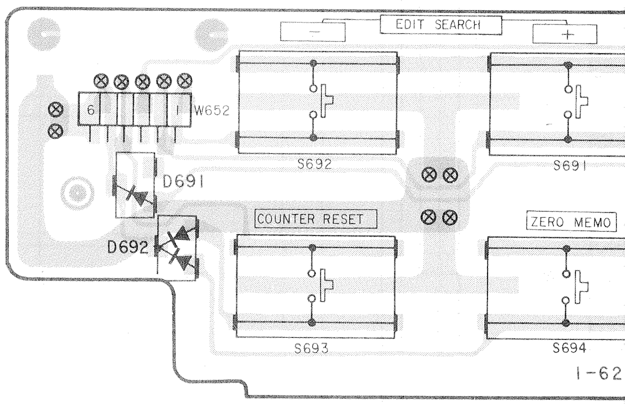
NT SIDE)


②
C908
R910
R912
W802
23
20
15
10
5
1
R911
R940
C902
64
54
49
48
45
40
35
33
32
30
25
20
17
16
10
5
1
IC902
R941
R942
R909
R916
IC903
20
25
28
1-630-547-
11
2
3
4

LI-10 BOARD (CONDUCTOR SIDE)

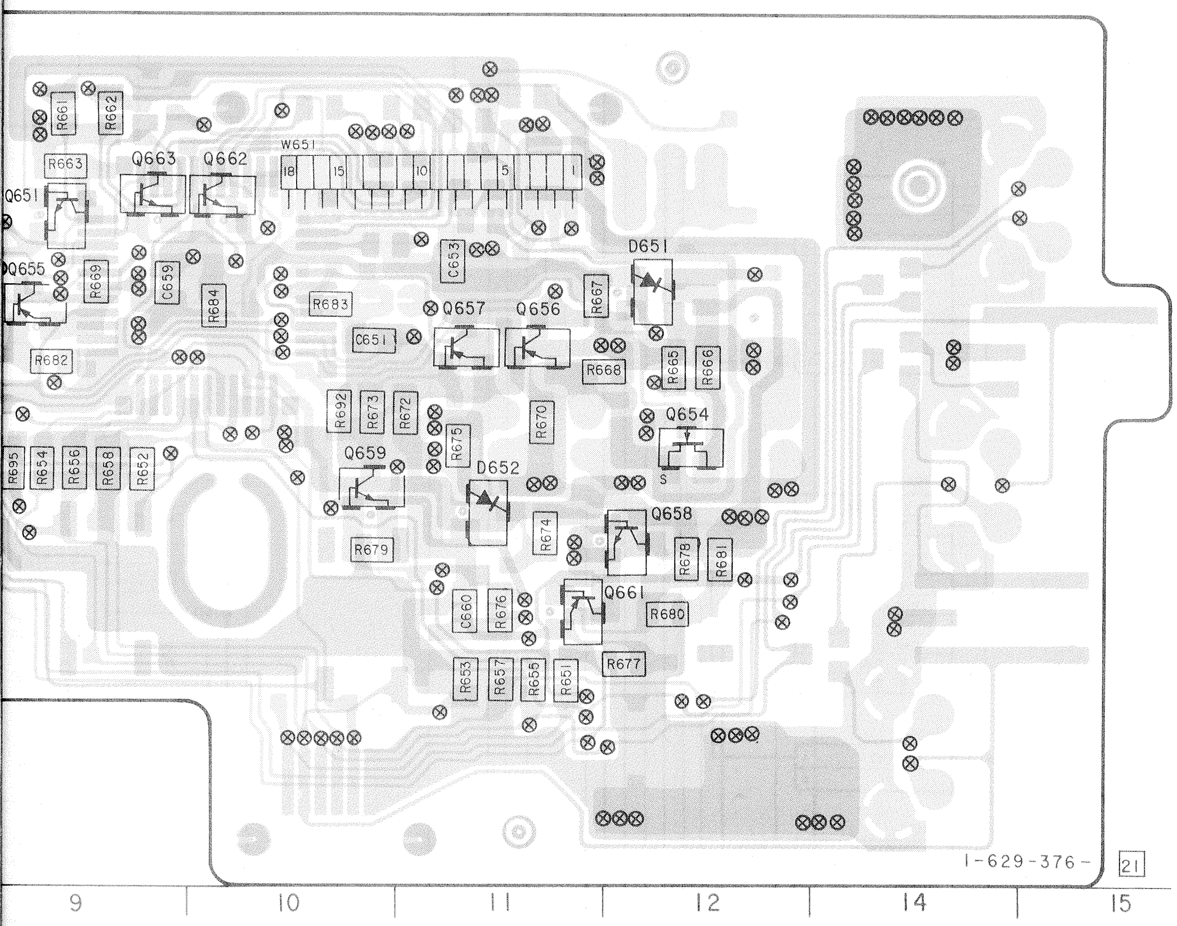

C905
R904
C903
R903
C901
J901
R908
R902
R905
R901
Q901
Q903
R907
R906
Q902
IC901
8
4
5
C904
L903
C906
L901
C916
C907
C915
C918
C917
L904
1-630-547
11
5
6
7
8

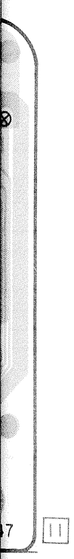
DK-2P BOARD (COMPONENT SIDE)


EDIT SEARCH
−
+
W652
6
1
S692
S691
D691
COUNTER RESET
ZERO MEMO
D692
S693
S694
1-62

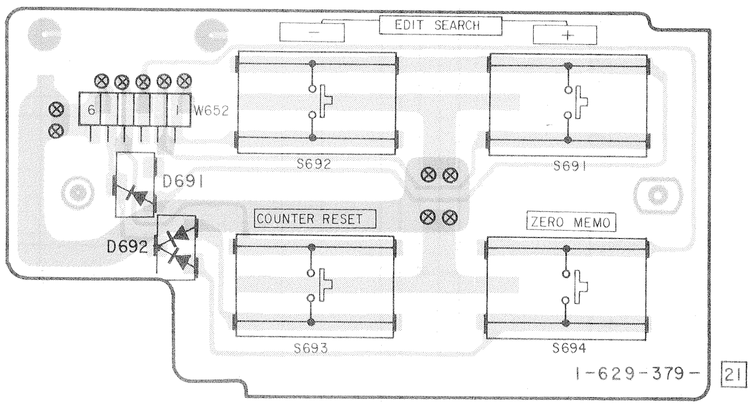
DIGITAL TITLE DIGIT

-8P BOARD (CONDUCTOR SIDE)

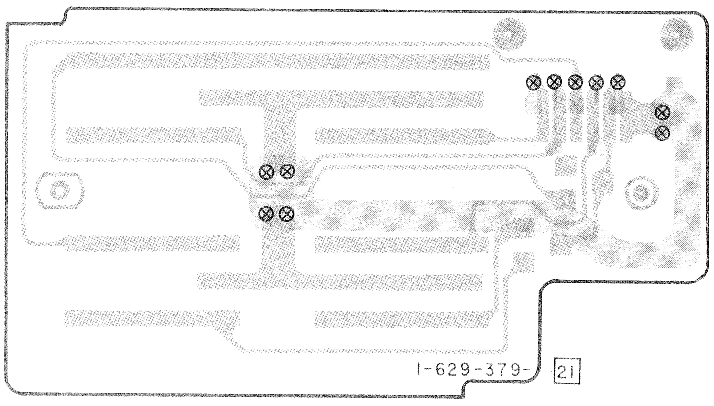

R661
R662
W651
18
15
10
5
1
R663
Q663
Q662
Q651
Q655
R669
C659
R684
C653
D651
R683
Q657
Q656
R667
C651
R668
R665
R666
R682
R692
R673
R672
R670
Q654
R675
S
R695
R654
R656
R658
R652
Q659
D652
R674
Q658
R678
R681
R679
C660
R676
Q661
R680
R653
R657
R655
R651
R677
1-629-376-
21
9
10
11
12
14
15



DK-2P BOARD (COMPONENT SIDE)

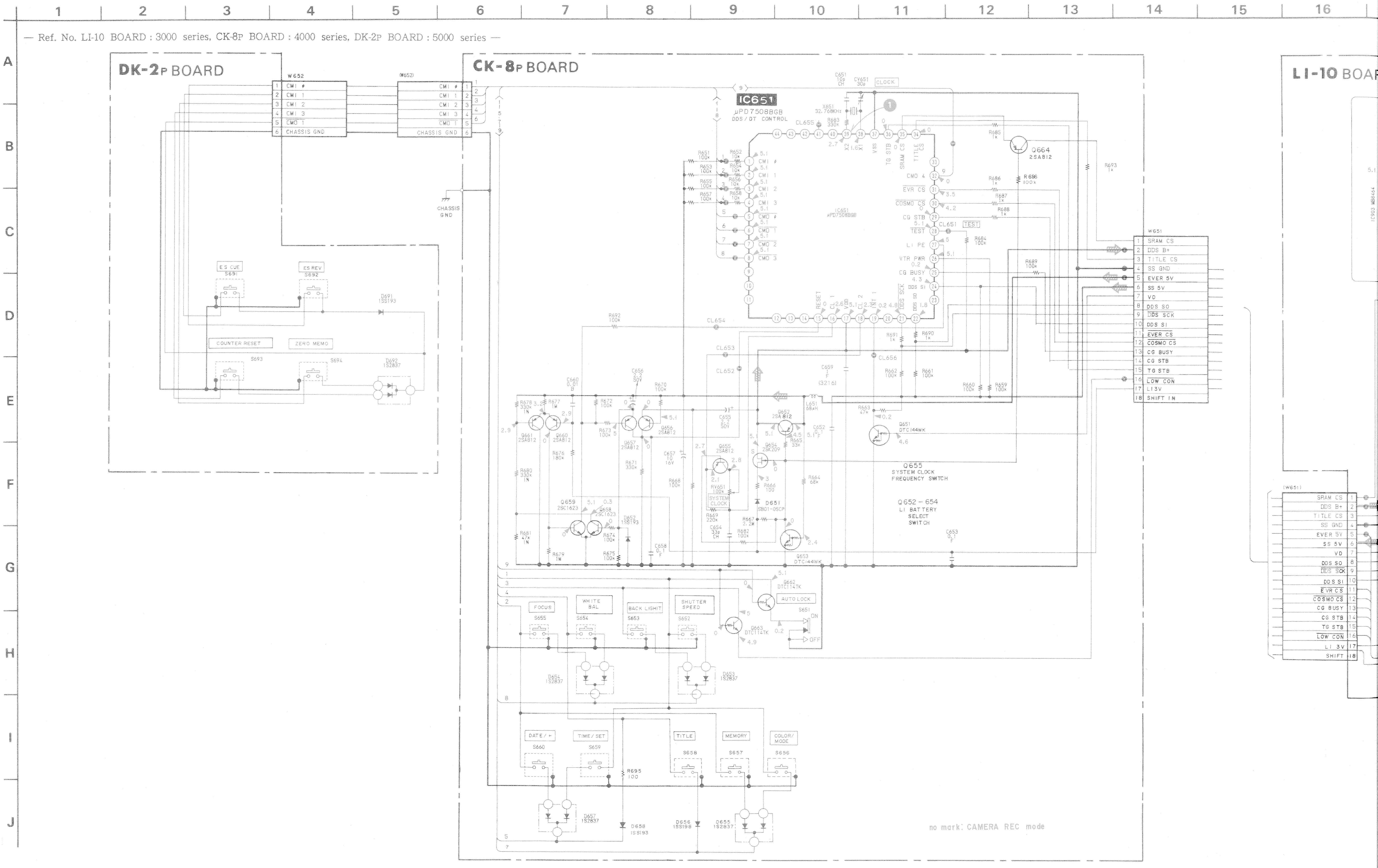

EDIT SEARCH
−
+
6
1
W652
S692
S691
D691
D692
COUNTER RESET
ZERO MEMO
S693
S694
1-629-379-
21

DK-2P BOARD (CONDUCTOR SIDE)

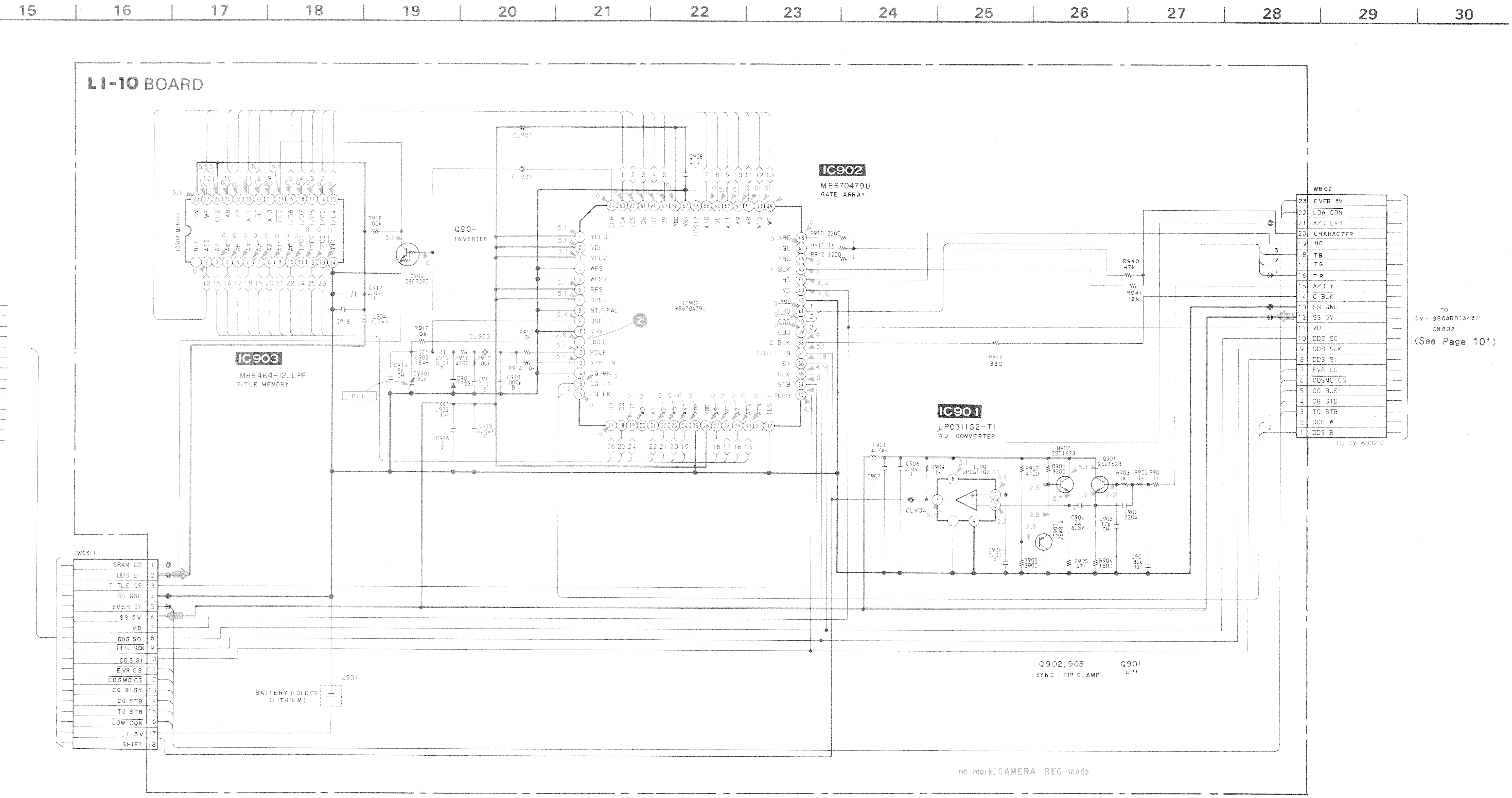


LI-10 (RELAY), CK-8P (TITLE CONTROL, CAMERA FUNCTION SWITCH), DK-2P (EDIT SEARCH SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. LI-10 BOARD : 3000 series, CK-8P BOARD : 4000 series, DK-2P BOARD : 5000 series —


DK-2P BOARD
CK-8P BOARD
LI-10 BOARD
W652
CMI #
CMI 1
CMI 2
CMI 3
CMD 1
CHASSIS GND
IC651
μPD7508BGB
DDS/DT CONTROL
CLOCK
X651 32.768KHz
Q664 2SA812
W651
SRAM CS
DDS B+
TITLE CS
SS GND
EVER 5V
SS 5V
VD
DDS SO
DDS SCK
DDS SI
EVER CS
COSMO CS
CG BUSY
CG STB
TG STB
LOW CON
LI 3V
SHIFT IN
ES CUE S691
ES REV S692
COUNTER RESET
ZERO MEMO
S693
S694
D691 1SS193
D692 1S2837
Q655 SYSTEM CLOCK FREQUENCY SWITCH
Q652 – 654 LI BATTERY SELECT SWITCH
RV651 SYSTEM CLOCK
D651 SB01-05CP
AUTO LOCK S651 ON OFF
FOCUS S655
WHITE BAL S654
BACK LIGHT S653
SHUTTER SPEED S652
D654 1S2837
D653 1S2837
DATE/+ S660
TIME/SET S659
TITLE S658
MEMORY S657
COLOR/MODE S656
R695 100
D657 1S2837
D658 1SS193
D656 1SS198
D655 1S2837
CHASSIS GND

no mark: CAMERA REC mode


15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
LI-10 BOARD
IC902
MB670479U
GATE ARRAY
IC903
MB8464-12LLPF
TITLE MEMORY
IC901
μPC311G2-T1
AD CONVERTER
Q904
INVERTER
Q904 2SC3395
CL901
CL902
CL903
CL904
PLL
YDL0
YDL1
YDL2
WPS1
WPS2
RPS1
RPS2
NT/PAL
OSCI
VSS
OSCO
PDUP
XPP IN
CG MK
CG IN
CG BK
YRO
YGO
YBO
Y BLK
HD
VD
Vss
CRO
CGO
CBO
C BLK
SHIFT IN
SI
CLK
STB
BUSY
TEST1
TEST2
R910 2200
R911 1k
R912 2200
R940 47k
R941 12k
R942 330
R917 10k
R918 100k
R913 10k
R914 10k
R915 100k
R916 4700
L902 18μH
L903 1μH
L904 4.7μH
C917 0.047
C908 0.01
CV901 30p
D901 1T33
C910 1000p
W802
23 EVER 5V
22 LOW CON
21 A/D EVR
20 CHARACTER
19 HD
18 TB
17 TG
16 TR
15 A/D Y
14 C BLK
13 SS GND
12 SS 5V
11 VD
10 DDS SO
9 DDS SCK
8 DDS SI
7 EVR CS
6 COSMO CS
5 CG BUSY
4 CG STB
3 TG STB
2 DDS W
1 DDS B
TO CV-980ARD(3/3) CN802
(See Page 101)
TO CV-8 (3/3)
(W651)
SRAM CS 1
DDS B+ 2
TITLE CS 3
SS GND 4
EVER 5V 5
SS 5V 6
VD 7
DDS SO 8
DDS SCK 9
DDS SI 10
EVR CS 11
COSMO CS 12
CG BUSY 13
CG STB 14
TG STB 15
LOW CON 16
LI 3V 17
SHIFT 18
BATTERY HOLDER (LITHIUM)
J901
L901 4.7μH
Q902 2SC1623
Q901 2SC1623
Q903 2SA812
R909 1k
R907 4700
R906 3300
R903 1k
R902 1k
R901 1k
R908 3900
R905 47k
R904 1800
C904 22 6.3V
C903 12p CH
C902 220p
C901 82p CH
C905 0.01
Q902, 903
SYNC - TIP CLAMP
Q901
LPF
no mark: CAMERA REC mode

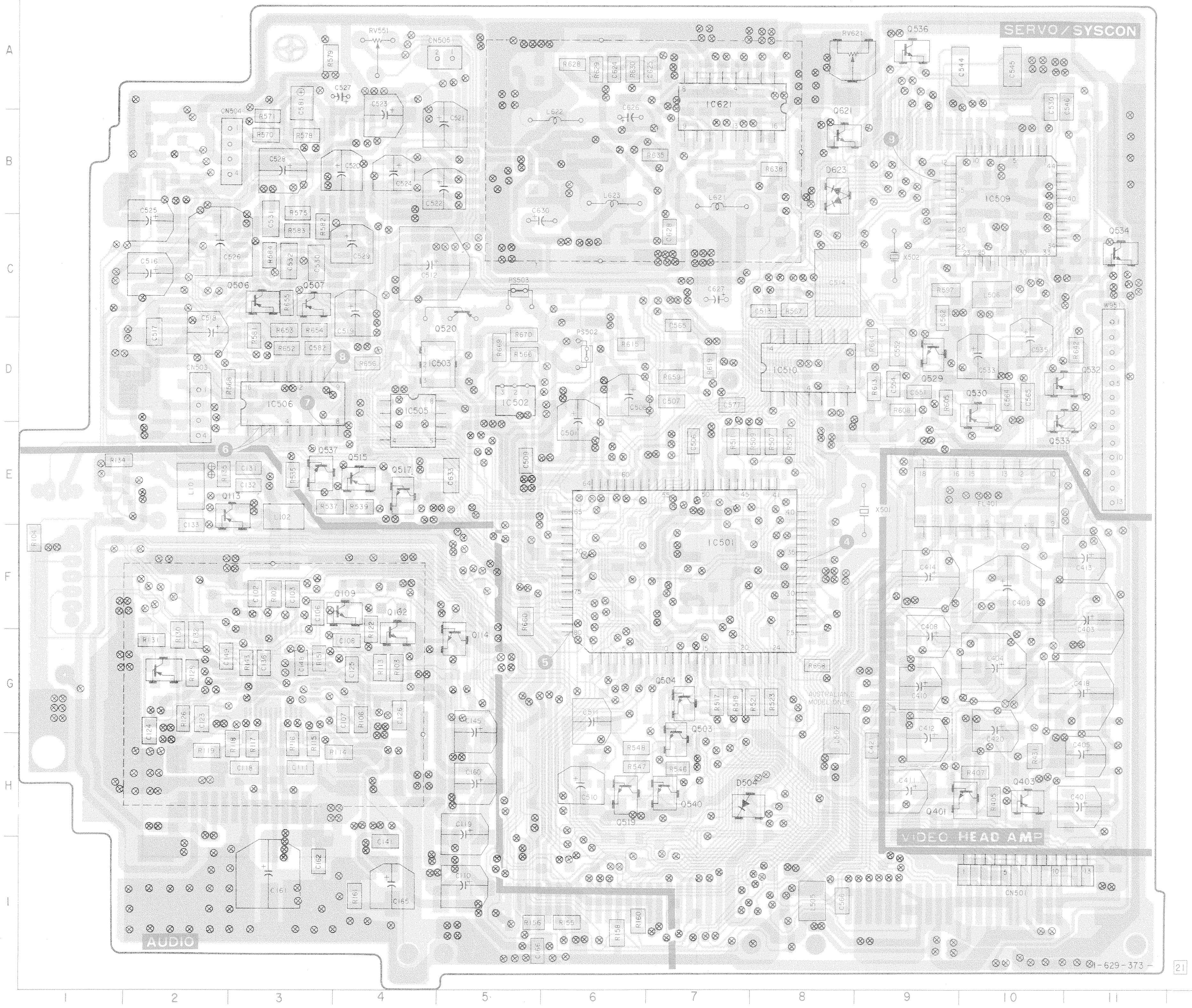
CO-2P (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-15P (TFG/SFG AMP), KS-3P (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) PRINTED WIRING BOARDS

— Ref. No. CO-2P BOARD : 6000 series —

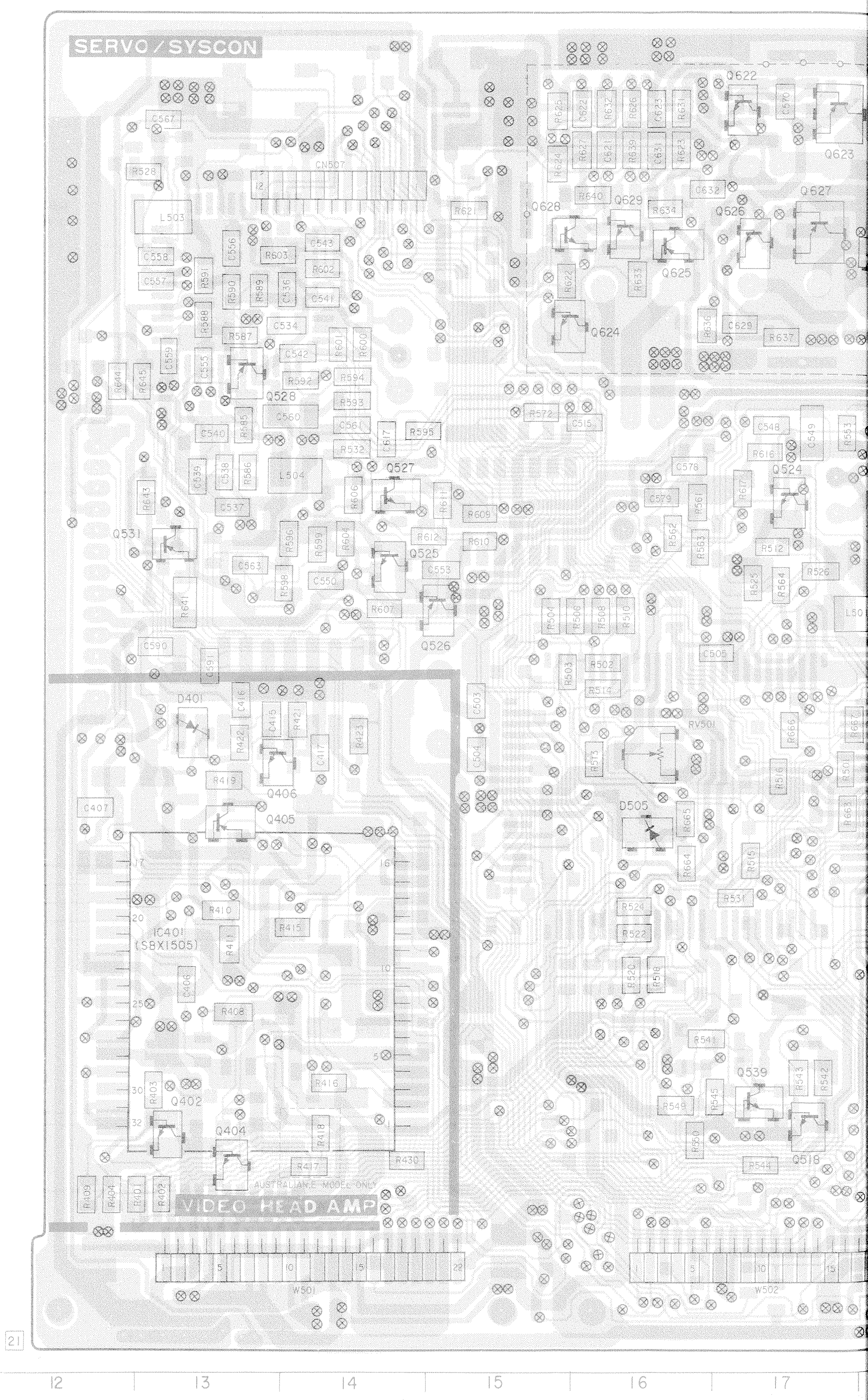
CO-2P BOARD

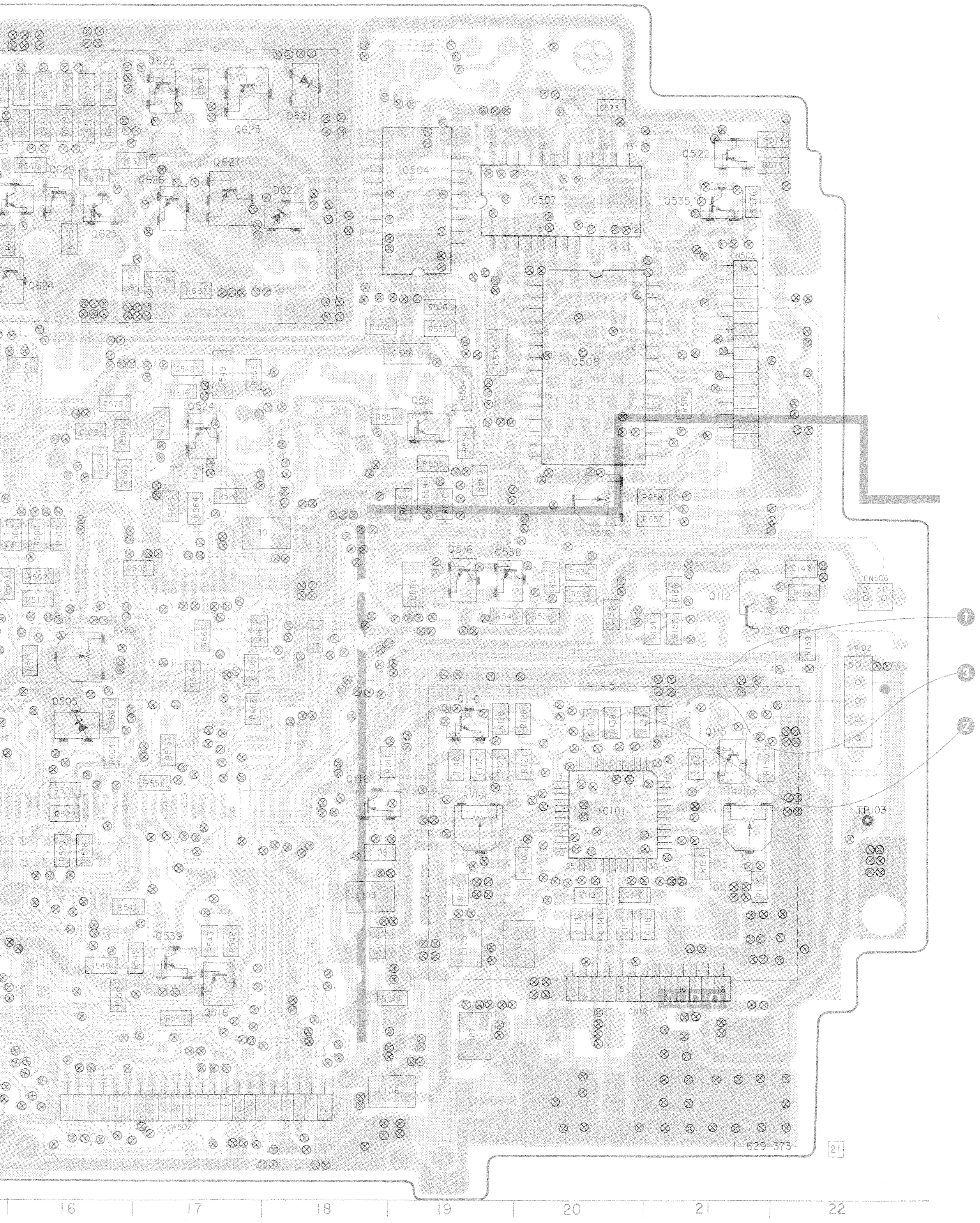
CN101	H-21
CN102	F-22
CN501	I-10
CN502	C-21
CN503	D-2
CN504	B-3
CN505	A-5
CN506	E-22
CN507	B-14
D401	E-13
D504	H-8
D505	F-16
D621	A-18
D622	B-18
D623	B-8
IC101	G-20
IC401	G-13
IC501	F-7
IC502	D-5
IC503	D-5
IC504	B-19
IC505	D-4
IC506	D-3
IC507	B-20
IC508	C-20
IC509	B-10
IC510	D-8
IC621	A-7
Q102	F-4
Q108	G-2
Q109	F-4
Q110	F-19
Q112	E-21
Q113	E-3
Q114	F-5
Q115	F-21
Q116	G-18
Q401	H-10
Q402	H-13
Q403	H-10
Q404	H-13
Q405	F-13
Q406	F-13
Q503	H-7
Q504	G-7
Q506	C-3
Q507	C-3
Q515	E-4
Q516	E-19
Q517	E-4
Q518	H-17
Q519	H-6
Q520	C-5
Q521	D-19
Q522	B-21
Q524	D-17
Q525	D-14
Q526	E-15
Q527	D-14
Q528	C-13
Q529	D-9
Q530	D-10
Q531	D-13
Q532	D-11
Q533	D-11
Q534	C-11
Q535	B-21
Q536	A-9
Q537	E-3
Q538	E-19
Q539	H-17
Q540	H-7
Q621	B-8
Q622	A-17
Q623	A-17
Q624	C-16
Q625	B-16
Q626	B-17
Q627	B-17
Q628	B-16
Q629	B-16
Q630	E-8
RV101	G-19
RV102	G-21
RV501	F-16
RV502	D-20
RV551	A-4
RV621	A-8
TP103	G-22
W501	I-14
W502	I-17
W951	D-11

CO-2P BOARD (COMPONENT SIDE)

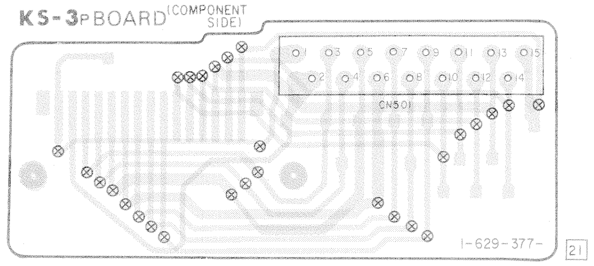

SERVO/SYSCON
AUDIO
VIDEO HEAD AMP
IC501
IC509
IC510
IC621
IC506
IC505
IC503
IC502
CN501
1-629-373-
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11

CO-2P BOARD (CONDUCTOR SIDE)

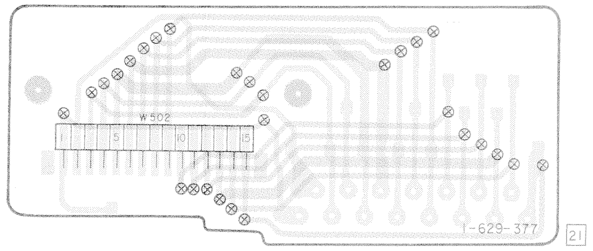

SERVO/SYSCON
VIDEO HEAD AMP
IC401
(SBX1505)
CN507
W501
W502
12
13
14
15
16
17


IC504
IC507
IC508
IC101
Q622
Q623
D621
Q627
Q626
D622
Q629
Q625
Q624
Q521
Q522
Q535
CN502
RV502
Q516
Q538
Q112
CN506
CN102
Q110
Q115
RV101
RV102
Q116
TP103
D505
RV501
Q539
Q519
W502
CN101
AUDIO
①
③
②
1-629-373-
21
16
17
18
19
20
21
22

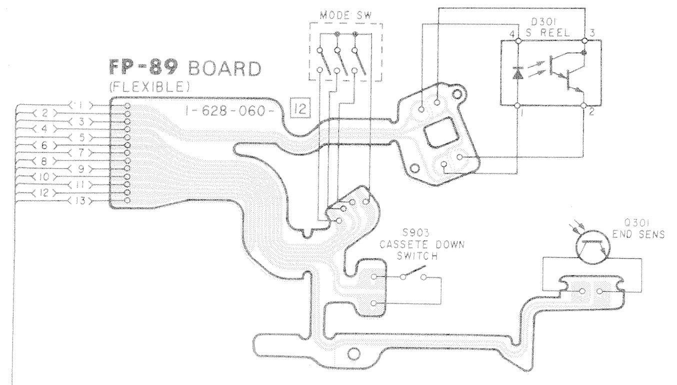
KS-3P BOARD (COMPONENT SIDE)


CN501
1-629-377-
21

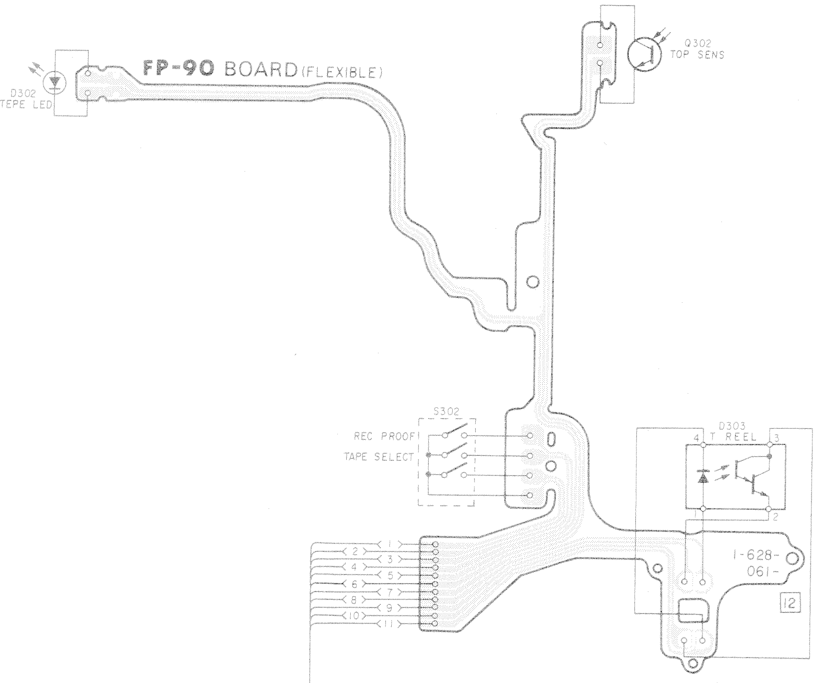
KS-3P BOARD (CONDUCTOR SIDE)


W502
1-629-377
21

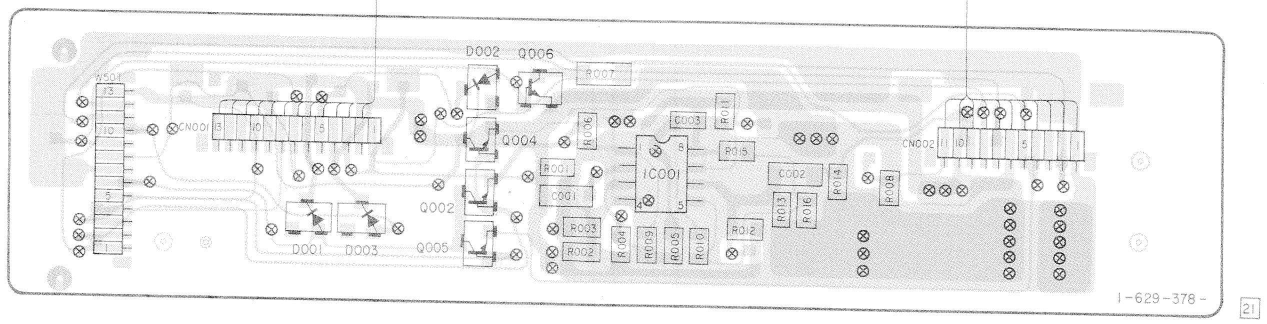
FP-89 BOARD (FLEXIBLE)


MODE SW
D301
S REEL
1-628-060-
12
S901
CASSETE DOWN
SWITCH
Q301
END SENS

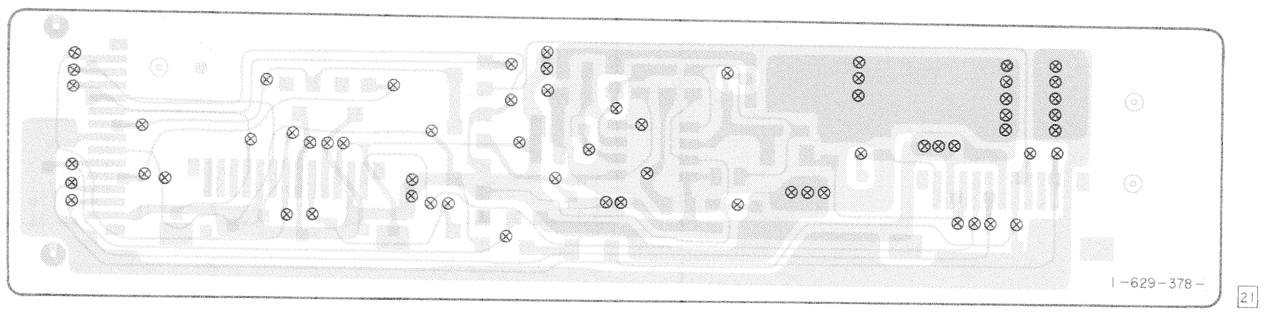
FP-90 BOARD (FLEXIBLE)


D302
TAPE LED
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
1-628-061-
12

CC-15P BOARD (COMPONENT SIDE)


W501
CN001
D002
Q006
Q004
IC001
Q002
D001
D003
Q005
CN002
1-629-378-
21

CC-15P BOARD (CONDUCTOR SIDE)

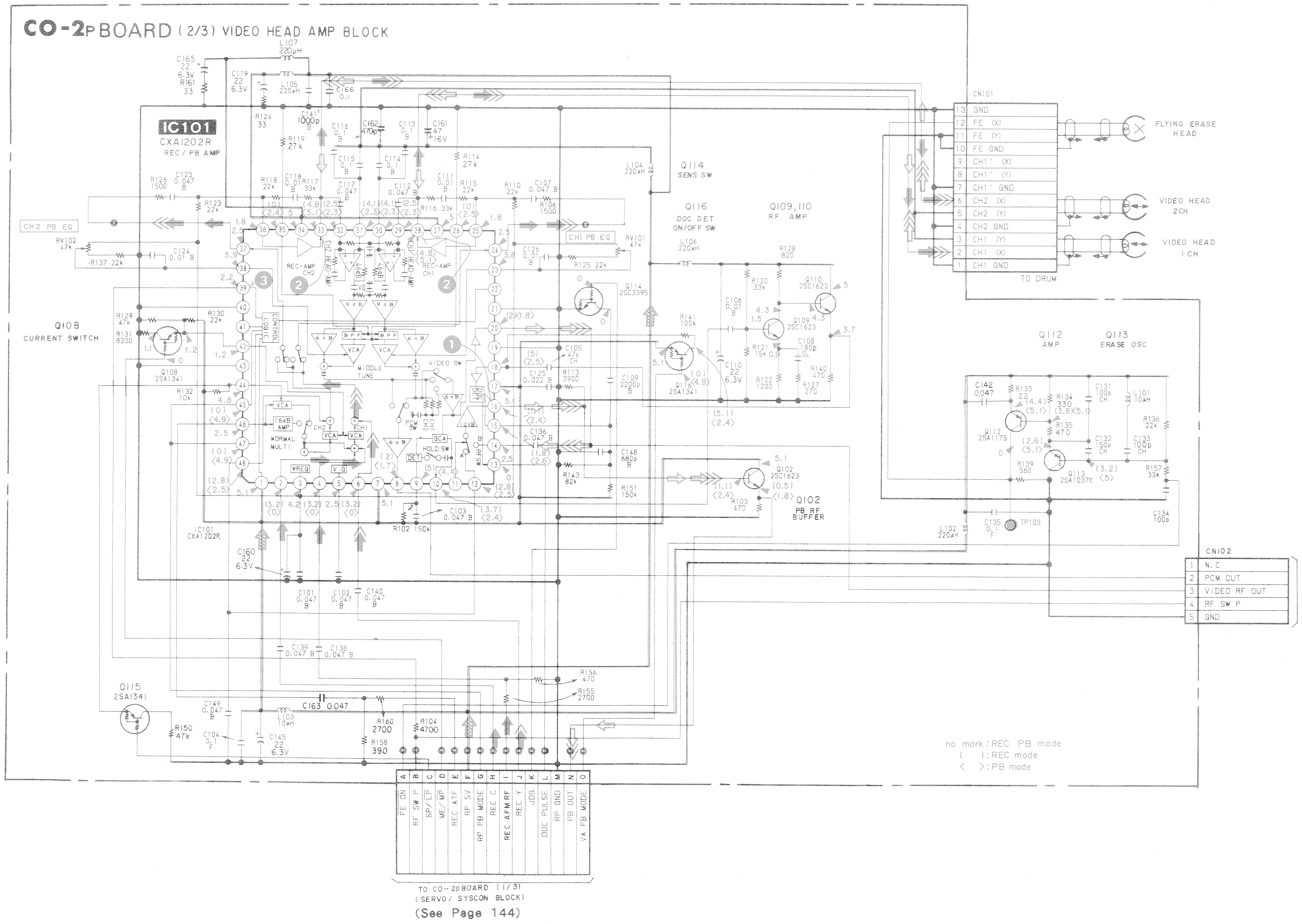


CO-2P (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAMS

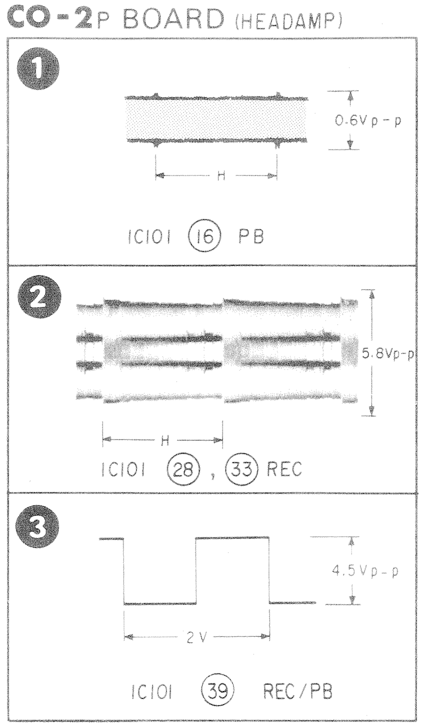
— Ref. No. CO-2P BOARD : 6000 series —

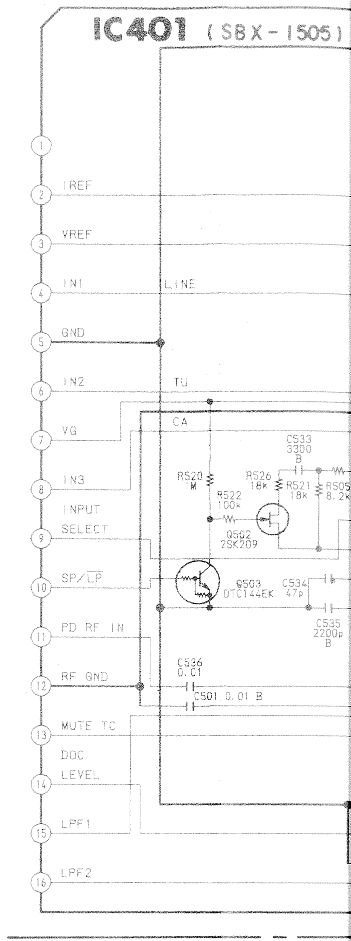
- Signal path

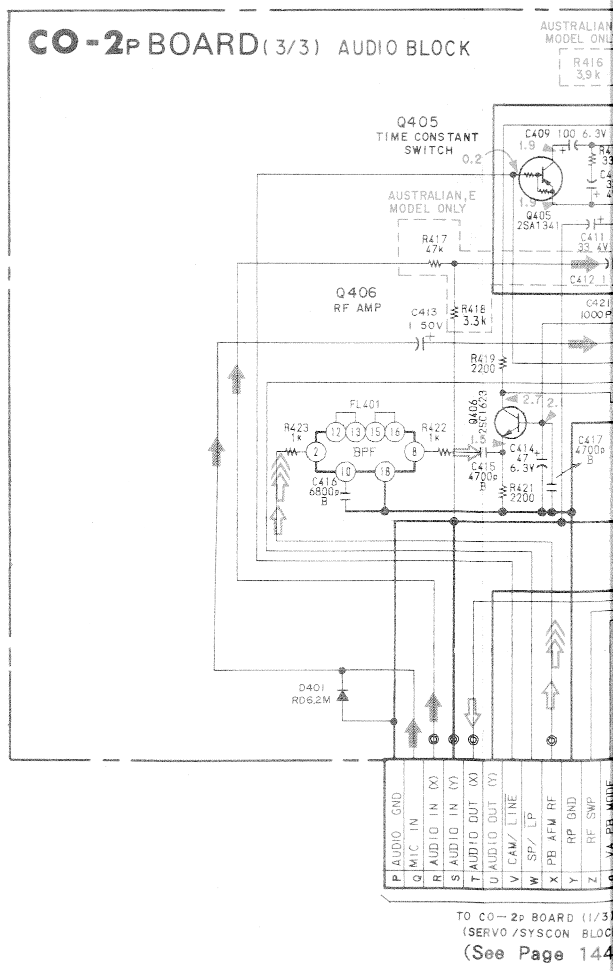
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB			⇨	⇨


CO-2P BOARD (2/3) VIDEO HEAD AMP BLOCK
IC101
CXA1202R
REC/PB AMP
L107 220μH
C165 22 6.3V
R161 33
C119 22 6.3V
L105 220μH
C166 0.1
R124 33
C141 1000p
R119 27k
C162 470p
C113 0.1
C161 47 16V
R114 27k
L104 220μH
Q114 SENS SW
Q116 DOC DET ON/OFF SW
Q109,110 RF AMP
L106 220μH
R128 820
R120 33k
Q110 2SC1623
Q109 2SC1623
C106 0.01
C108 180p
R121 15k
R122 1200
R140 470
R127 270
C110 22 6.3V
R141 100k
Q116 2SA1341
Q114 2SC3395
RV101 47k
R125 22k
CH1 PB EQ
CH2 PB EQ
RV102 47k
R137 22k
C124 0.01
R126 1500
C123 0.047
R123 22k
R118 22k
C118 0.01
R117 33k
R116 33k
R115 22k
R110 22k
C107 0.047
R106 1500
C126 0.01
REC-AMP CH2
REC-AMP CH1
CONTROL
VCA
BPF
MIDDLE TUNE
VIDEO SW
16dB AMP
NORMAL MULTI
VREG
HOLD SW
DET
PCM SW
Q108 CURRENT SWITCH
Q108 2SA1341
R129 47k
R131 8200
R130 22k
R132 10k
C105 47p
R113 3900
C125 0.022
C109 2200p
C136 0.047
C148 680p
R143 82k
R151 150k
Q102 2SC1623
Q102 PB RF BUFFER
R103 470
C103 0.047
R102 150k
IC101 CXA1202R
C160 22 6.3V
C101 0.047
C102 0.047
C140 0.047
C139 0.047
C138 0.047
Q115 2SA1341
C149 0.047
R150 47k
C104 0.1
C145 22 6.3V
L103 10μH
C163 0.047
R160 2700
R104 4700
R158 390
R156 470
R155 2700
CN101
GND
FE (X)
FE (Y)
FE GND
CH1' (X)
CH1' (Y)
CH1' GND
CH2 (X)
CH2 (Y)
CH2 GND
CH1 (Y)
CH1 (X)
CH1 GND
TO DRUM
FLYING ERASE HEAD
VIDEO HEAD 2CH
VIDEO HEAD 1CH
Q112 AMP
Q113 ERASE OSC
C142 0.047
R133 22
R134 330
C131 100p
L101 10μH
R136 22k
R135 470
Q112 2SA1175
R139 560
Q113 2SA1037K
C132 150p
C133 100p
R157 33k
C134 100p
C135 0.1
TP103
L102 220μH
CN102
N.C
PCM OUT
VIDEO RF OUT
RF SW P
GND
CHECK PIN
FE ON
RF SW P
SP/LP
ME/MP
REC ATF
RP 5V
HP PB MODE
REC C
REC AFM RF
REC Y
JOG
DOC PULSE
RP GND
PB OUT
VA PB MODE
TO CO-2P BOARD (1/3) (SERVO/SYSCON BLOCK)
(See Page 144)

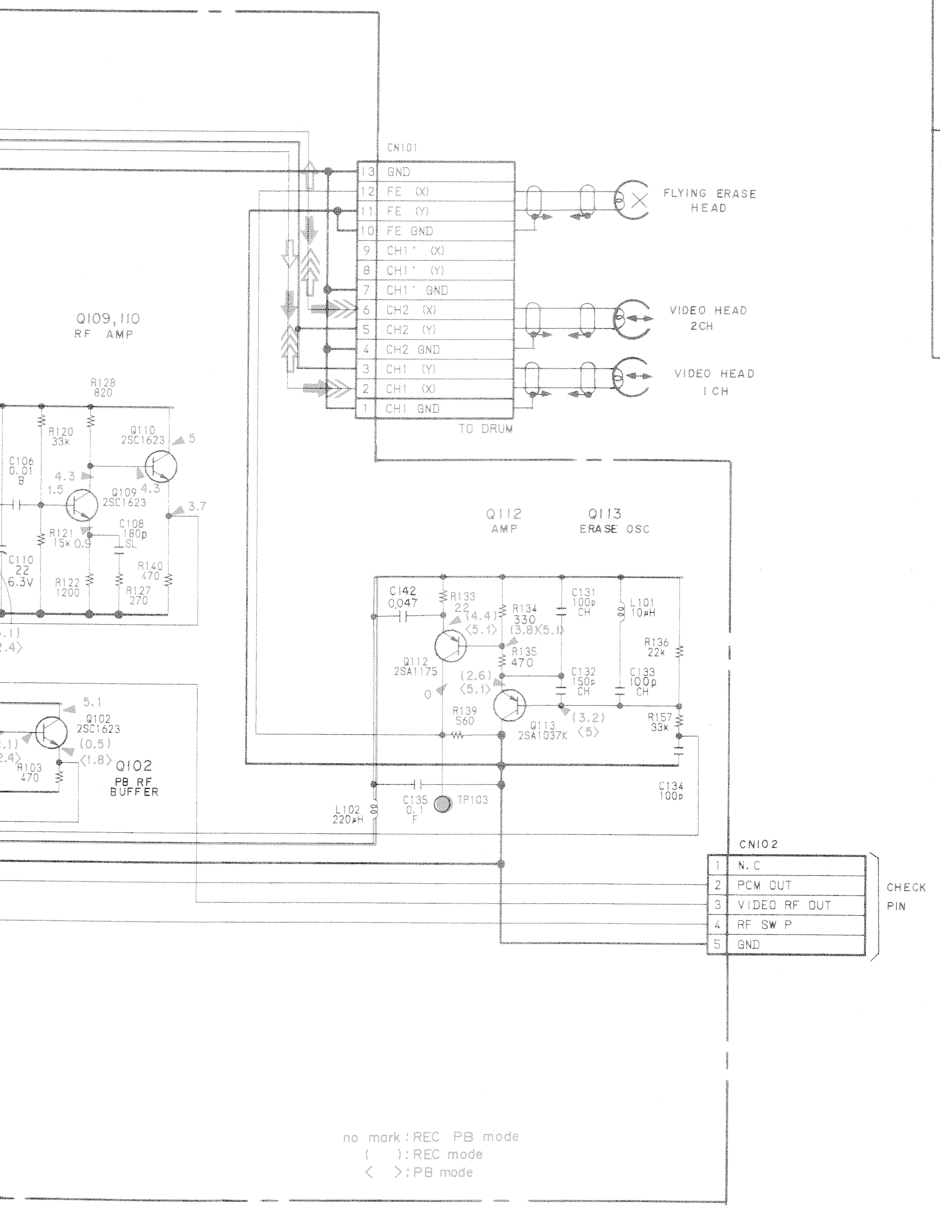
no mark : REC PB mode
( ) : REC mode
< > : PB mode



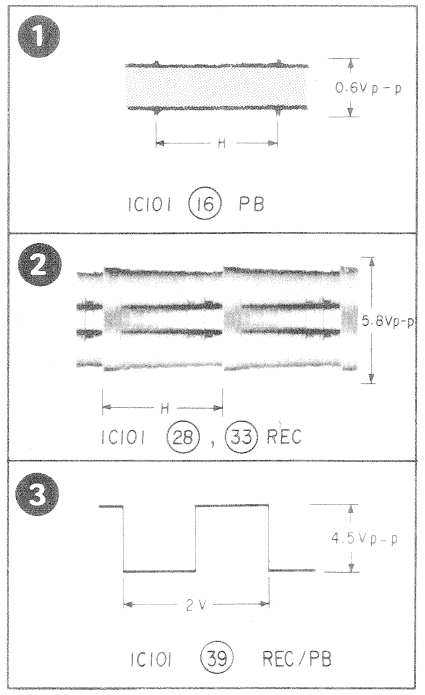

IC401 (SBX-1505)
IREF
VREF
IN1
LINE
GND
IN2
TU
VG
CA
IN3
INPUT SELECT
SP/LP
PD RF IN
RF GND
MUTE TC
DOC LEVEL
LPF1
LPF2
R520 1M
R526 18k
R521 18k
R522 100k
Q502 2SK209
Q503 DTC144EK
C533 3300
C534 47p
C535 2200p
C536 0.01
C501 0.01

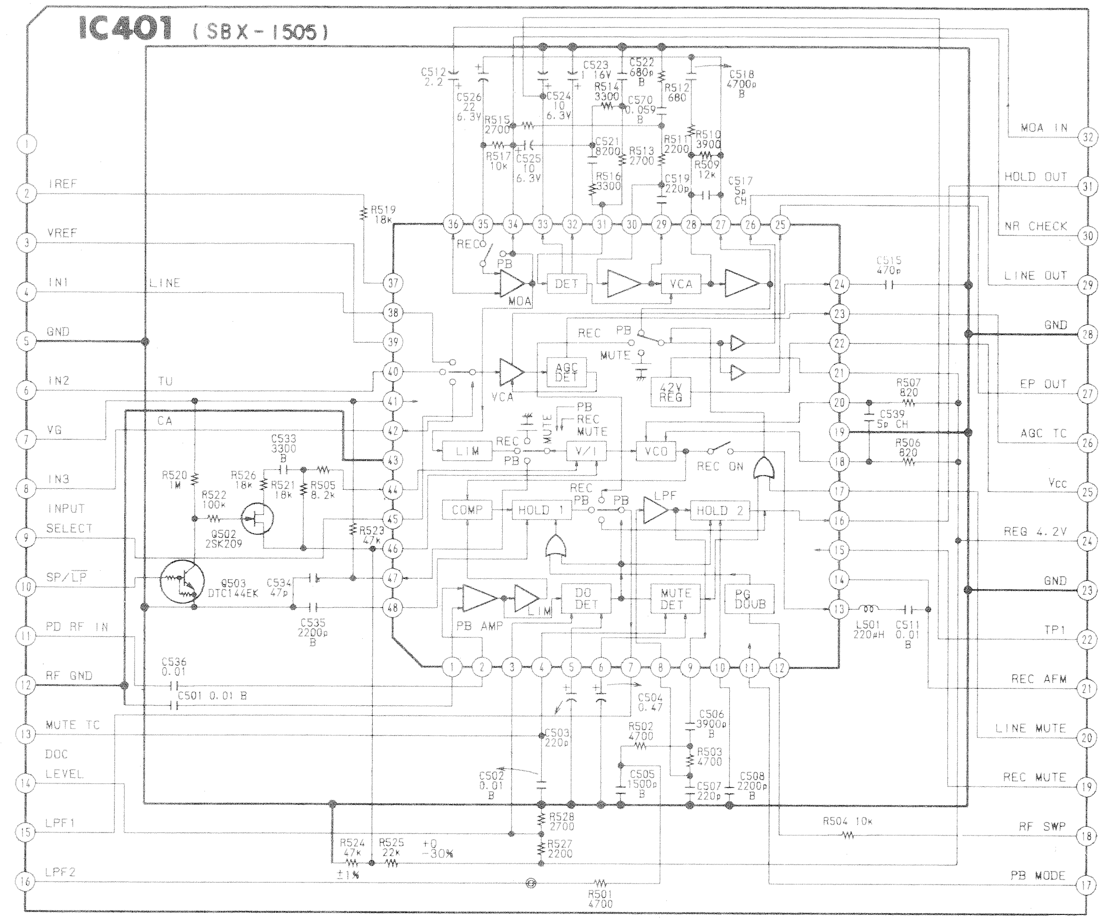

CO-2P BOARD (3/3) AUDIO BLOCK
AUSTRALIAN MODEL ONLY
R416 3.9k
Q405 TIME CONSTANT SWITCH
C409 100 6.3V
Q405 2SA1341
AUSTRALIAN, E MODEL ONLY
R417 47k
Q406 RF AMP
C413 1 50V
R418 3.3k
R419 2200
FL401
BPF
R423 1k
R422 1k
C416 6800p
Q406 2SC1623
C414 47 6.3V
C415 4700p
R421 2200
C417 4700p
D401 RD6.2M
AUDIO GND
MIC IN
AUDIO IN (X)
AUDIO IN (Y)
AUDIO OUT (X)
AUDIO OUT (Y)
CAM/LINE
SP/LP
PB AFM RF
RP GND
RF SWP
VA PB MODE
TO CO-2P BOARD (1/3) (SERVO/SYSCON BLOCK)
(See Page 144)

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

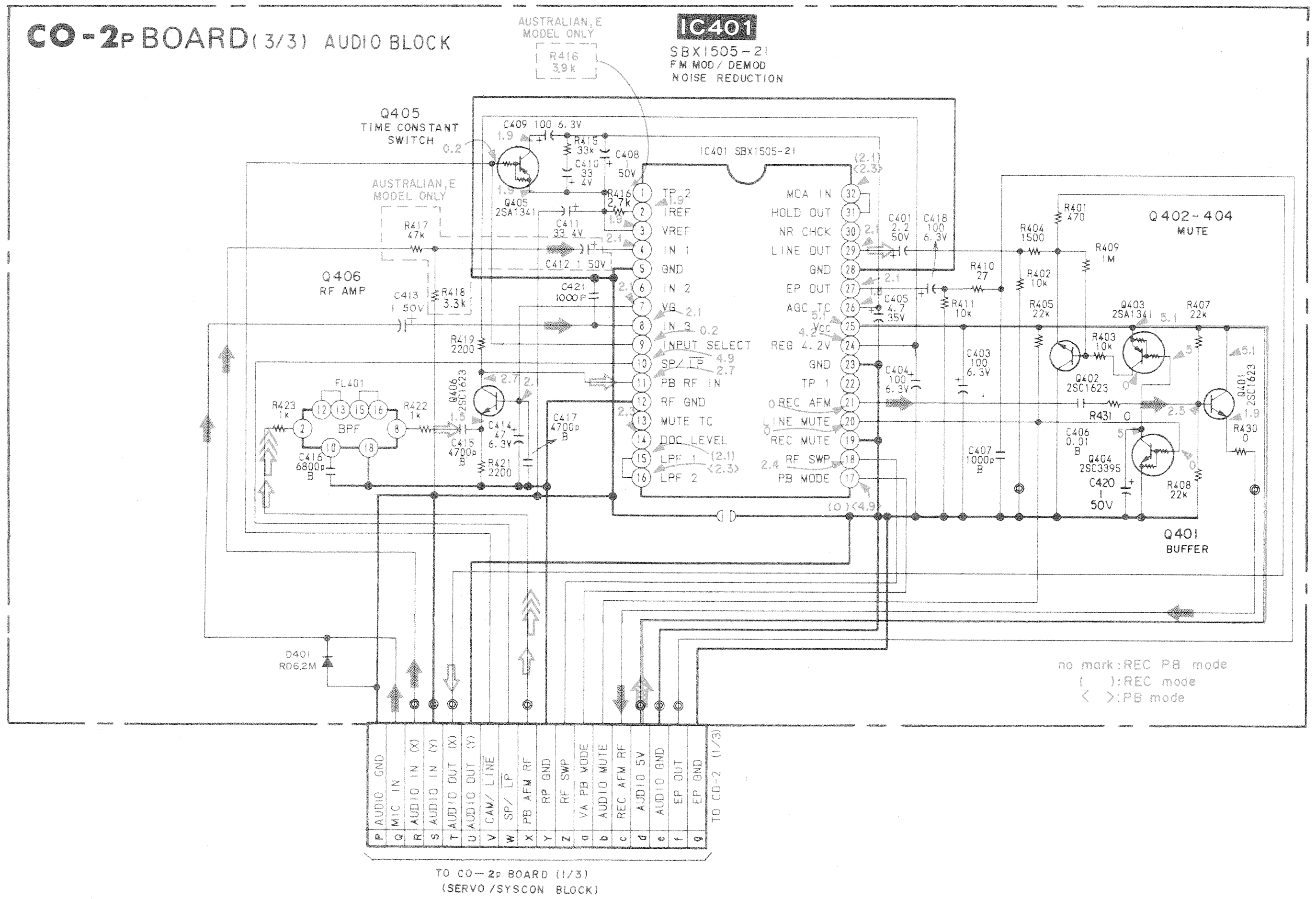

CN101
GND
FE (X)
FE (Y)
FE GND
CH1' (X)
CH1' (Y)
CH1' GND
CH2 (X)
CH2 (Y)
CH2 GND
CH1 (Y)
CH1 (X)
CH1 GND
TO DRUM
FLYING ERASE HEAD
VIDEO HEAD 2CH
VIDEO HEAD 1CH
Q109,110 RF AMP
Q112 AMP
Q113 ERASE OSC
Q102 PB RF BUFFER
TP103
CN102
N.C
PCM OUT
VIDEO RF OUT
RF SW P
GND
CHECK PIN
no mark : REC PB mode
( ) : REC mode
< > : PB mode

CO-2P BOARD (HEADAMP)




IC401 (SBX-1505)
IREF
VREF
IN1
GND
IN2
VG
IN3
INPUT SELECT
SP/LP
PB RF IN
RF GND
MUTE TC
DOC LEVEL
LPF1
LPF2
MDA IN
HOLD OUT
NR CHECK
LINE OUT
GND
EP OUT
AGC TC
Vcc
REG 4.2V
GND
TP1
REC AFM
LINE MUTE
REC MUTE
RF SWP
PB MODE
LINE
TU
CA
MDA
DET
VCA
AGC DET
4.2V REG
LIM
V/I
VCO
REC ON
COMP
HOLD 1
LPF
HOLD 2
PB AMP
DO DET
MUTE DET
FG DOUB
Q502 2SK209
Q503 DTC144EK

CO-2P BOARD (3/3) AUDIO BLOCK


AUSTRALIAN,E MODEL ONLY
R416 3.9k
IC401
SBX1505-21
FM MOD/DEMOD
NOISE REDUCTION
Q405 TIME CONSTANT SWITCH
Q406 RF AMP
FL401 BPF
Q402-404 MUTE
Q401 BUFFER
D401 RD6.2M
no mark : REC PB mode
( ) : REC mode
< > : PB mode
AUDIO GND
MIC IN
AUDIO IN (X)
AUDIO IN (Y)
AUDIO OUT (X)
AUDIO OUT (Y)
CAM/LINE
SP/LP
PB AFM RF
RP GND
RF SWP
VA PB MODE
AUDIO MUTE
REC AFM RF
AUDIO 5V
AUDIO GND
EP OUT
EP GND
TO CO-2 (1/3)

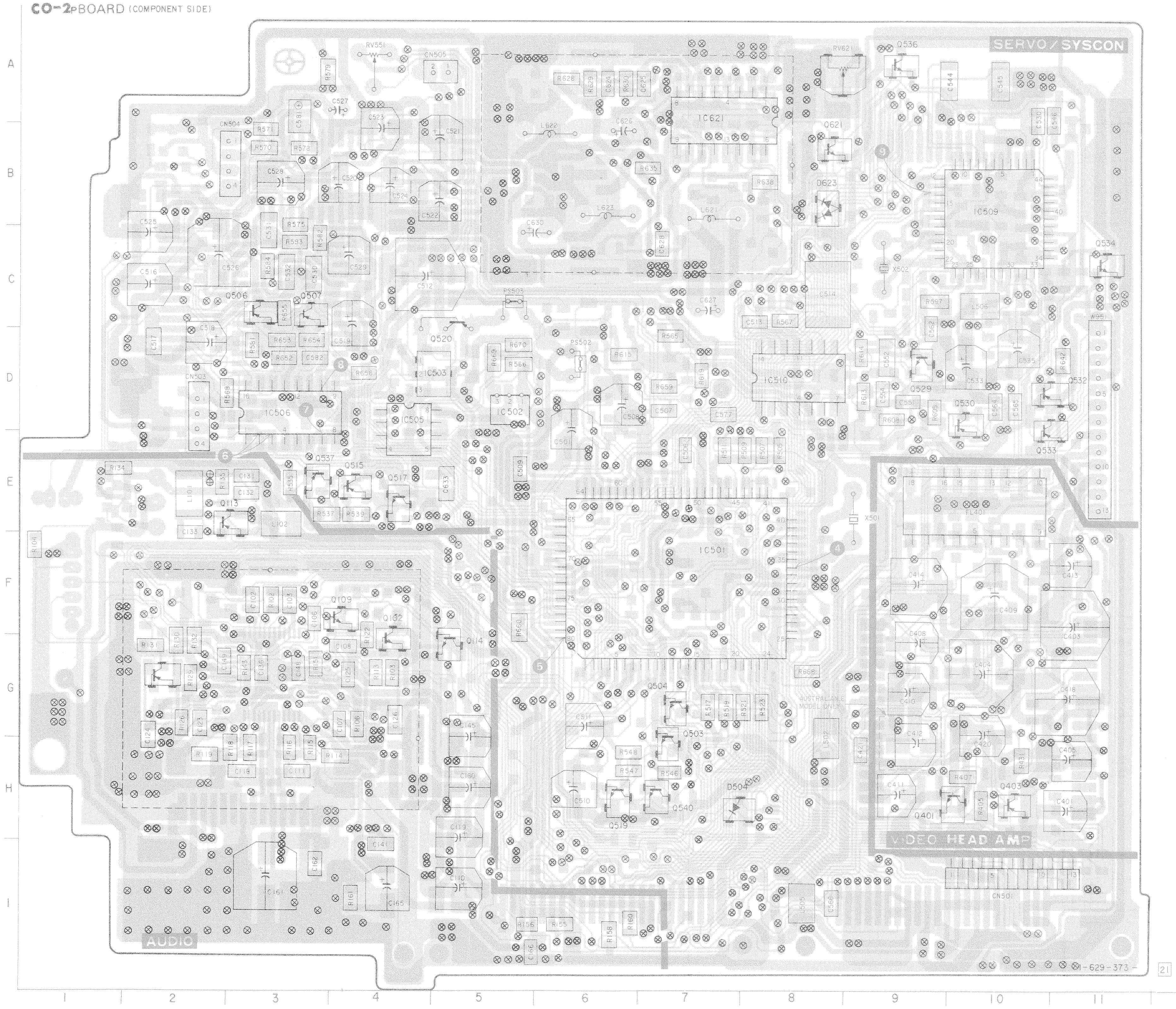
TO CO-2P BOARD (1/3)
(SERVO/SYSCON BLOCK)
(See Page 144)

CO-2P (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-15P (TFG/SFG AMP), KS-3P (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) PRINTED WIRING BOARDS

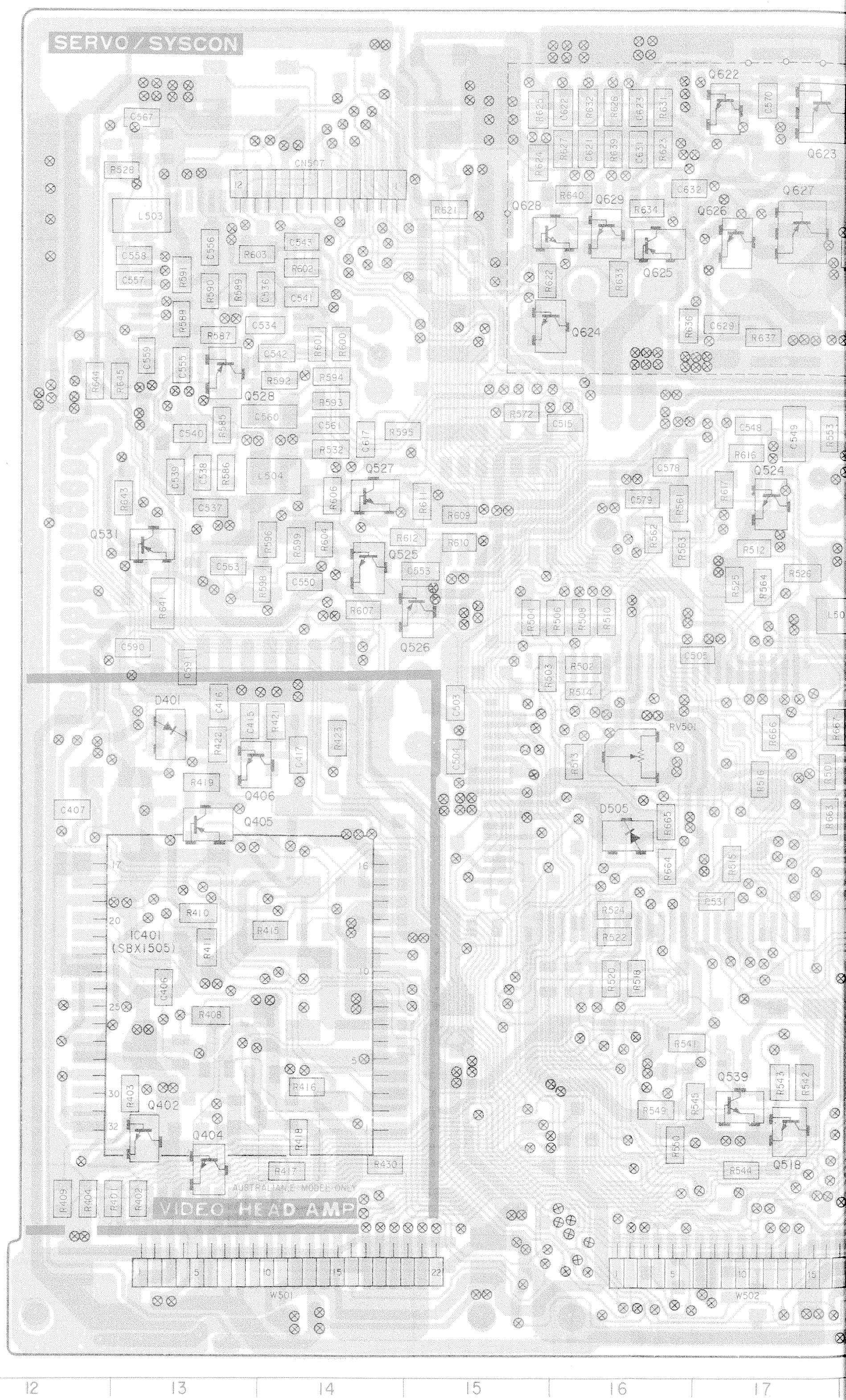
— Ref. No. CO-2P, FP-89 BOARDS : 6000 series, CC-15P, FP-90, KS-3P BOARDS : 7000 series —

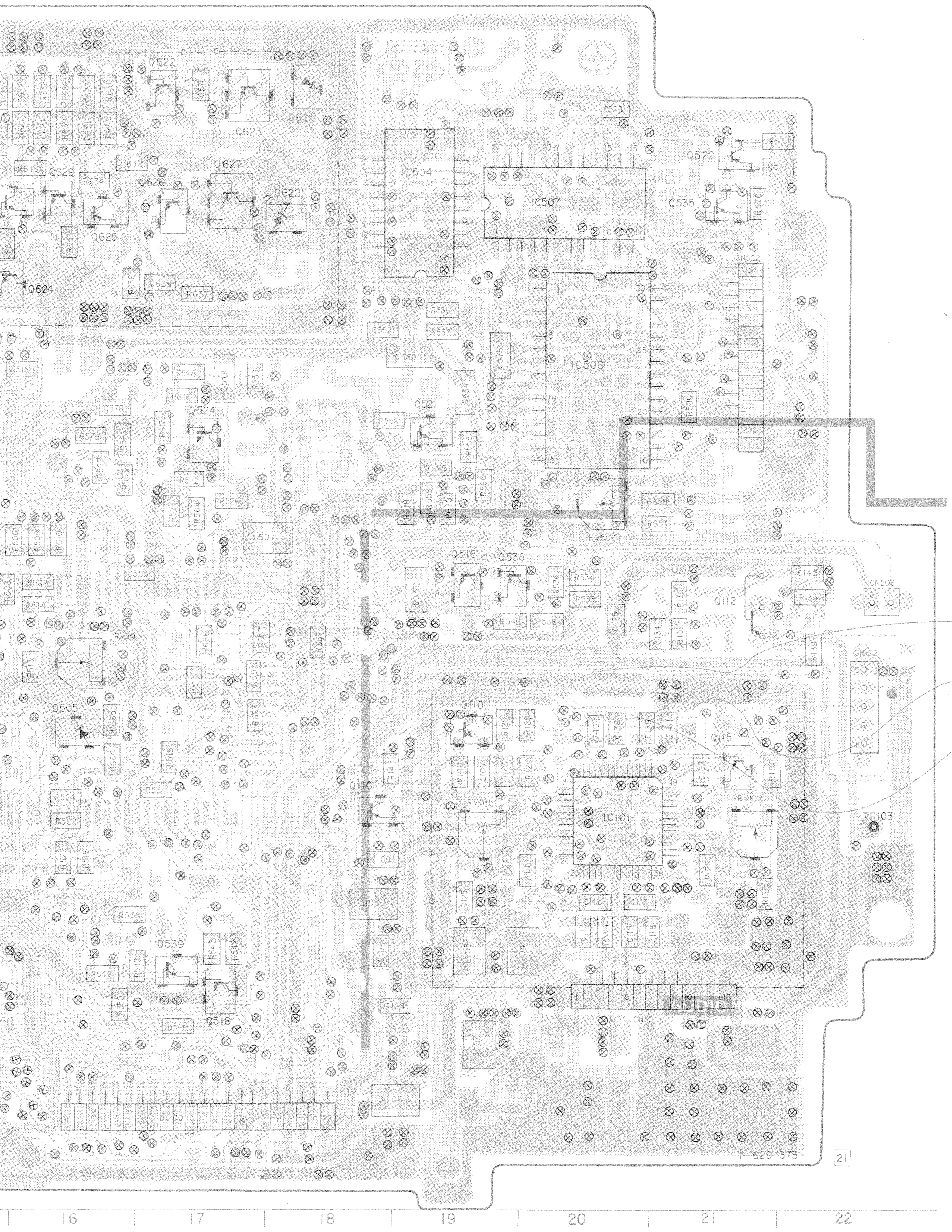
CO-2P BOARD	
CN101	H-21
CN102	F-22
CN501	I-10
CN502	C-21
CN503	D-2
CN504	B-3
CN505	A-5
CN506	E-22
CN507	B-14
D401	E-13
D504	H-8
D505	F-16
D621	A-18
D622	B-18
D623	B-8
IC101	G-20
IC401	G-13
IC501	F-7
IC502	D-5
IC503	D-5
IC504	B-19
IC505	D-4
IC506	D-3
IC507	B-20
IC508	C-20
IC509	B-10
IC510	D-8
IC621	A-7
Q102	F-4
Q108	G-2
Q109	F-4
Q110	F-19
Q112	E-21
Q113	E-3
Q114	F-5
Q115	F-21
Q116	G-18
Q401	H-10
Q402	H-13
Q403	H-10
Q404	H-13
Q405	F-13
Q406	F-13
Q503	H-7
Q504	G-7
Q506	C-3
Q507	C-3
Q515	E-4
Q516	E-19
Q517	E-4
Q518	H-17
Q519	H-6
Q520	C-5
Q521	D-19
Q522	B-21
Q524	D-17
Q525	D-14
Q526	E-15
Q527	D-14
Q528	C-13
Q529	D-9
Q530	D-10
Q531	D-13
Q532	D-11
Q533	D-11
Q534	C-11
Q535	B-21
Q536	A-9
Q537	E-3
Q538	E-19
Q539	H-17
Q540	H-7
Q621	B-8
Q622	A-17
Q623	A-17
Q624	C-16
Q625	B-16
Q626	B-17
Q627	B-17
Q628	B-16
Q629	B-16
Q630	E-8
RV101	G-19
RV102	G-21
RV501	F-16
RV502	D-20
RV551	A-4
RV621	A-8
TP103	G-22
W501	I-14
W502	I-17
W951	D-11

CO-2P BOARD (COMPONENT SIDE)

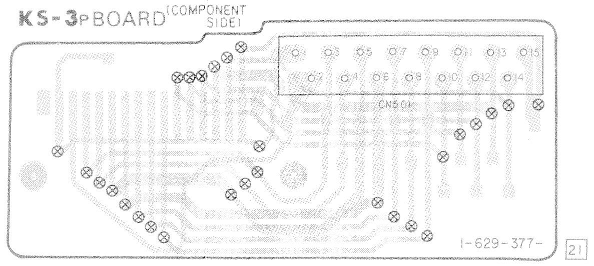

SERVO/SYSCON
AUDIO
VIDEO HEAD AMP
IC501
IC509
IC621
IC510
IC506
IC505
IC503
IC502
IC401
CN501
CN503
CN504
CN505
AUSTRALIAN MODEL ONLY
1-629-373-
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11

CO-2P BOARD (CONDUCTOR SIDE)

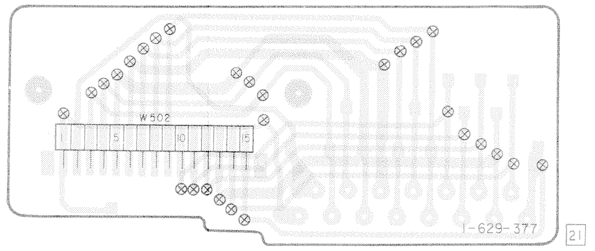

SERVO/SYSCON
VIDEO HEAD AMP
IC401 (SBX1505)
CN507
W501
W502
AUSTRALIAN MODEL ONLY
12
13
14
15
16
17


IC504
IC507
IC508
IC101
Q622
Q623
Q627
Q626
Q629
Q625
Q624
D621
D622
Q522
Q535
Q521
Q524
Q516
Q538
Q112
Q110
Q115
Q116
Q539
Q518
D505
RV501
RV502
RV101
RV102
CN502
CN506
CN102
CN101
W502
TP103
1-629-373-
21
16
17
18
19
20
21
22

KS-3P BOARD (COMPONENT SIDE)

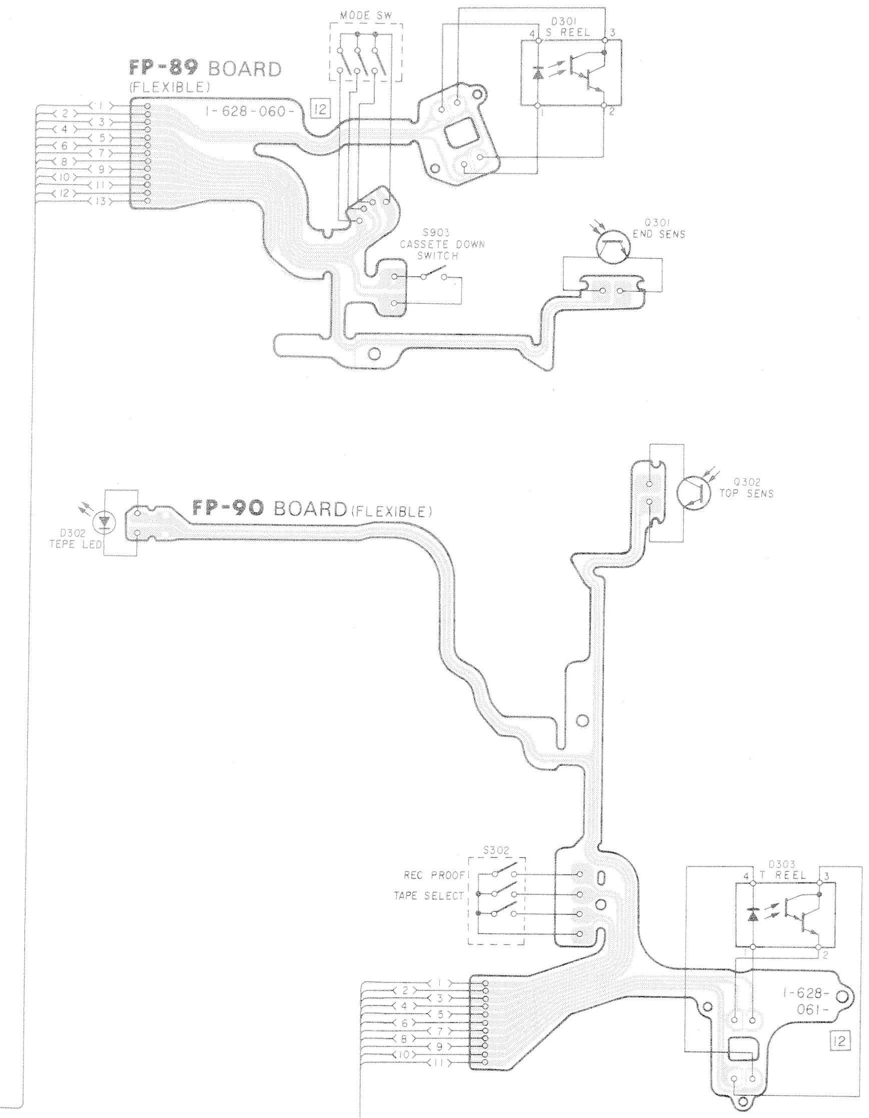

CN501
1-629-377-
21

KS-3P BOARD (CONDUCTOR SIDE)

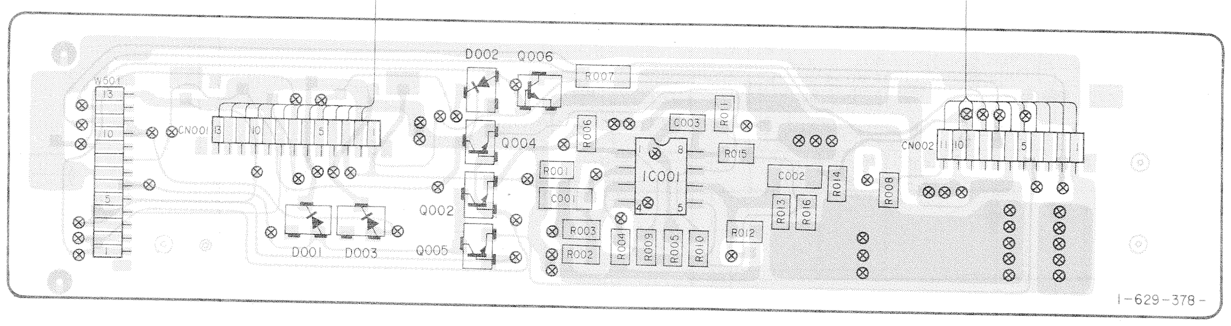

W502
1-629-377
21

FP-89 BOARD (FLEXIBLE)

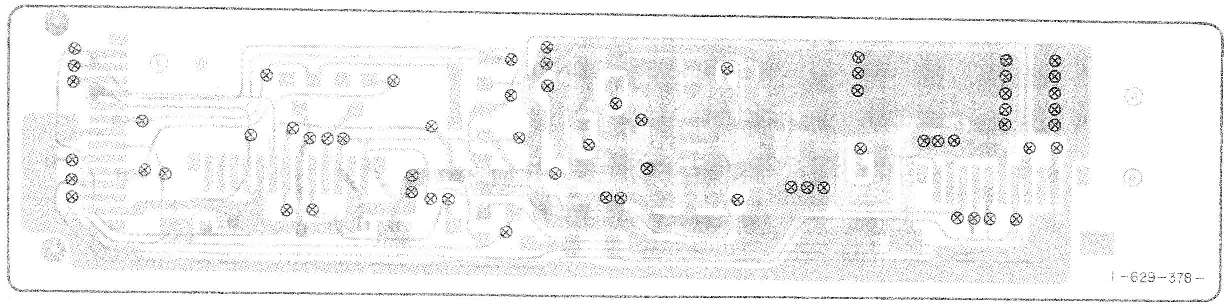
FP-90 BOARD (FLEXIBLE)


1-628-060-
12
MODE SW
Q301
S REEL
S903
CASSETE DOWN SWITCH
Q301
END SENS
Q302
TOP SENS
D302
TEPE LED
S302
REC PROOF
TAPE SELECT
Q303
T REEL
1-628-061-
12

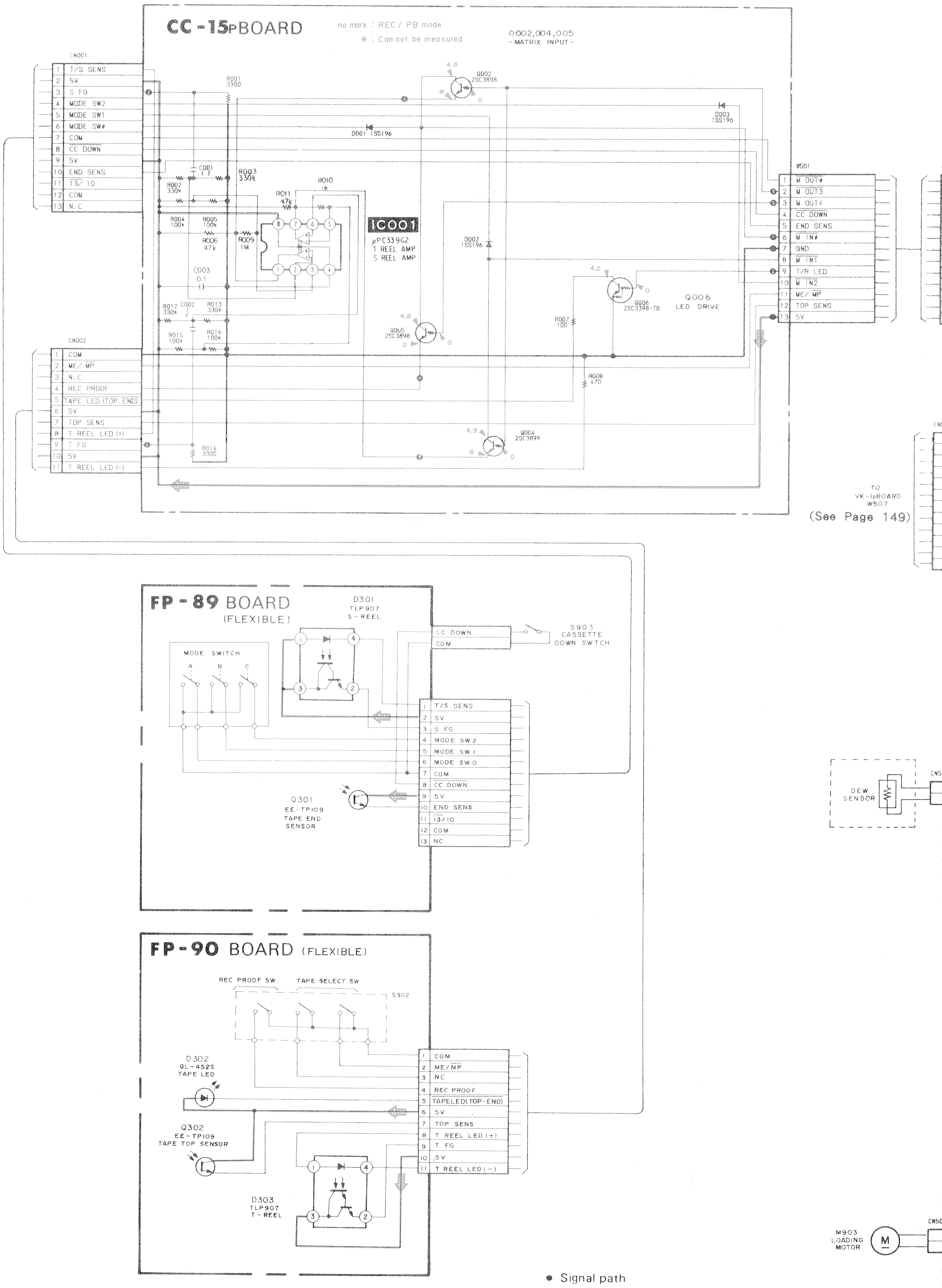
CC-15P BOARD (COMPONENT SIDE)

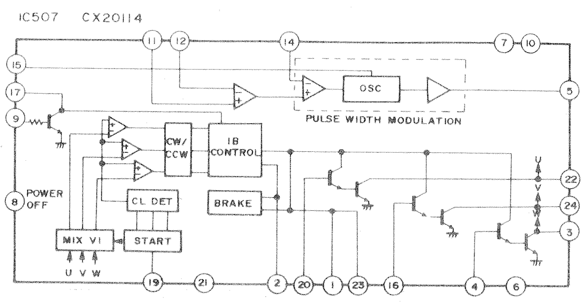

W501
CN001
D002
Q006
Q004
Q002
Q005
D001
D003
IC001
CN002
1-629-378-
21

CC-15P BOARD (CONDUCTOR SIDE)

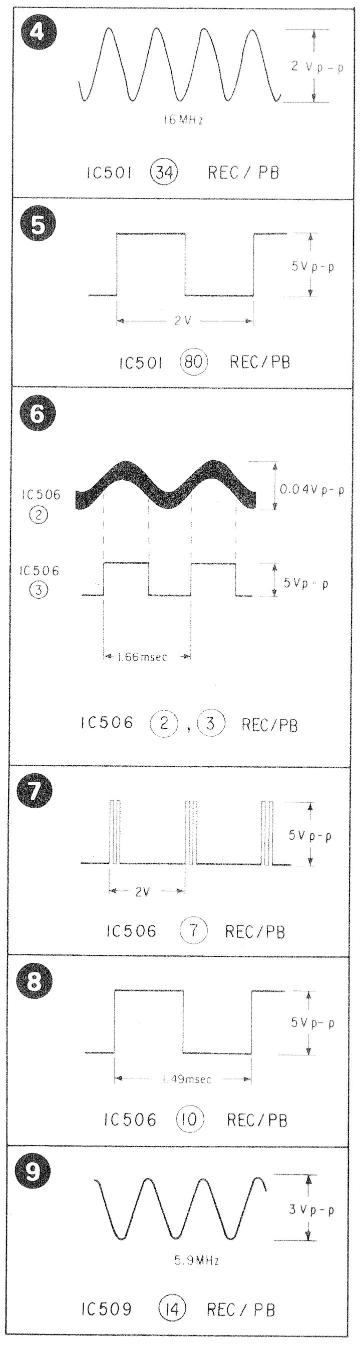


— Ref. No. CO-2P, FP-89 BOARDS : 6000 series, CC-15P, FP-90, KS-3P BOARDS : 7000 series —


CC-15P BOARD
no mark : REC / PB mode
✱ : Can not be measured
Q002,004,005
- MATRIX INPUT -
CN001
T/S SENS
5V
S FG
MODE SW2
MODE SW1
MODE SW0
COM
CC DOWN
5V
END SENS
13/10
COM
N.C
Q002 2SC3898
D001 1SS196
D003 1SS196
IC001
μPC339G2
T REEL AMP
S REEL AMP
D002 1SS196
Q006 2SC3398-TB
Q006 LED DRIVE
Q005 2SC3898
Q004 2SC3898
W501
M OUT4
M OUT3
M OUT4
CC DOWN
END SENS
M IN4
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
CN002
COM
ME/MP
N.C
REC PROOF
TAPE LED (TOP, END)
5V
TOP SENS
T REEL LED (+)
T FG
5V
T REEL LED (−)
TO VK-1sBOARD W507
(See Page 149)
FP-89 BOARD (FLEXIBLE)
D301 TLP907 S-REEL
MODE SWITCH
A B C
CC DOWN
COM
S903 CASSETTE DOWN SWITCH
T/S SENS
5V
S FG
MODE SW 2
MODE SW 1
MODE SW 0
COM
CC DOWN
5V
END SENS
13/10
COM
NC
Q301 EE-TP109 TAPE END SENSOR
DEW SENSOR
FP-90 BOARD (FLEXIBLE)
REC PROOF SW
TAPE SELECT SW
S302
D302 GL-452S TAPE LED
Q302 EE-TP109 TAPE TOP SENSOR
D303 TLP907 T-REEL
COM
ME/MP
NC
REC PROOF
TAPELED(TOP·END)
5V
TOP SENS
T REEL LED (+)
T FG
5V
T REEL LED (−)
M903 LOADING MOTOR
M
CN50


IC507 CX20114
OSC
PULSE WIDTH MODULATION
CW/CCW
IB CONTROL
POWER OFF
CL DET
BRAKE
MIX VI
START
U V W

CO-2P BOARD (SERVO / SYSCON)



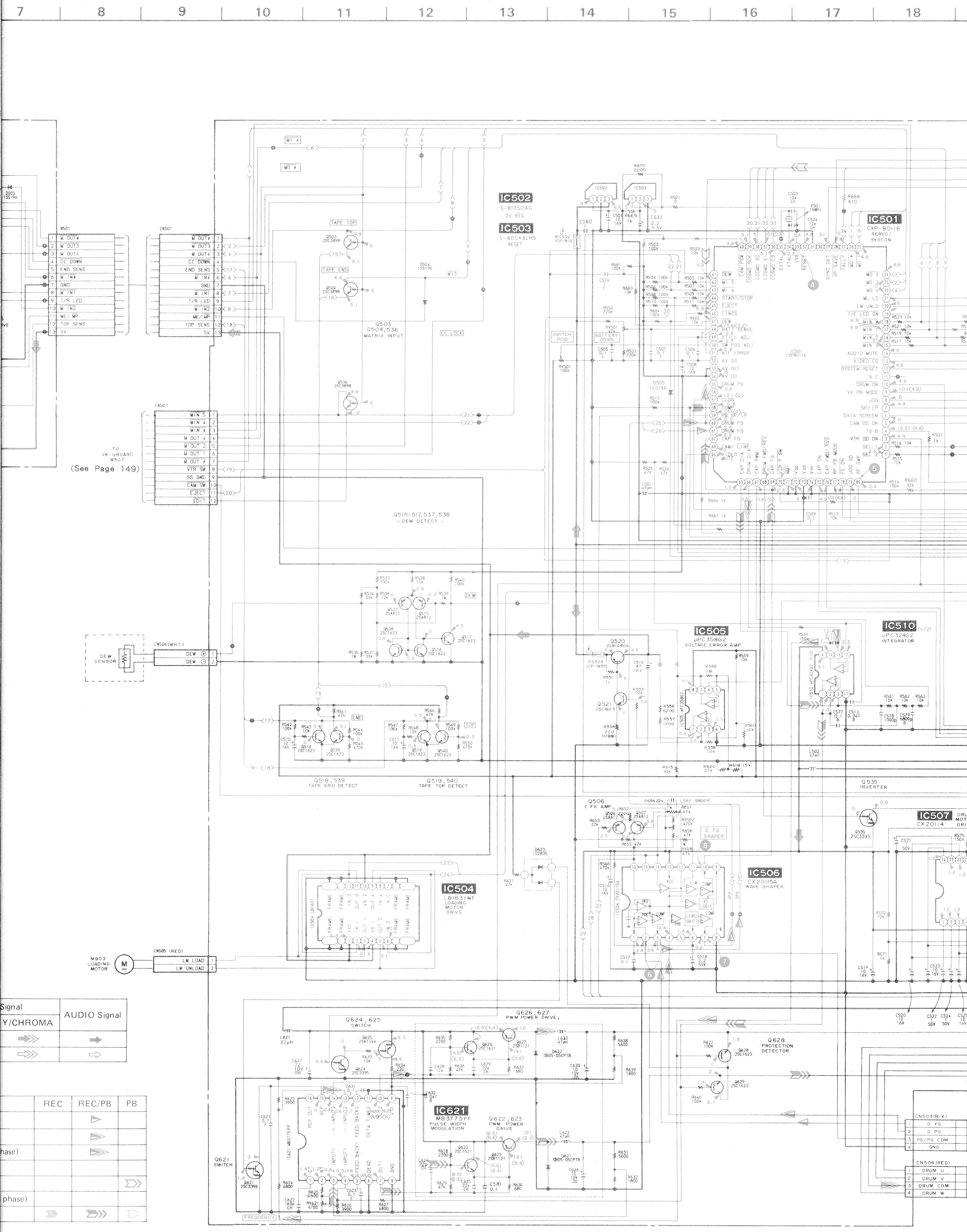
- Signal path

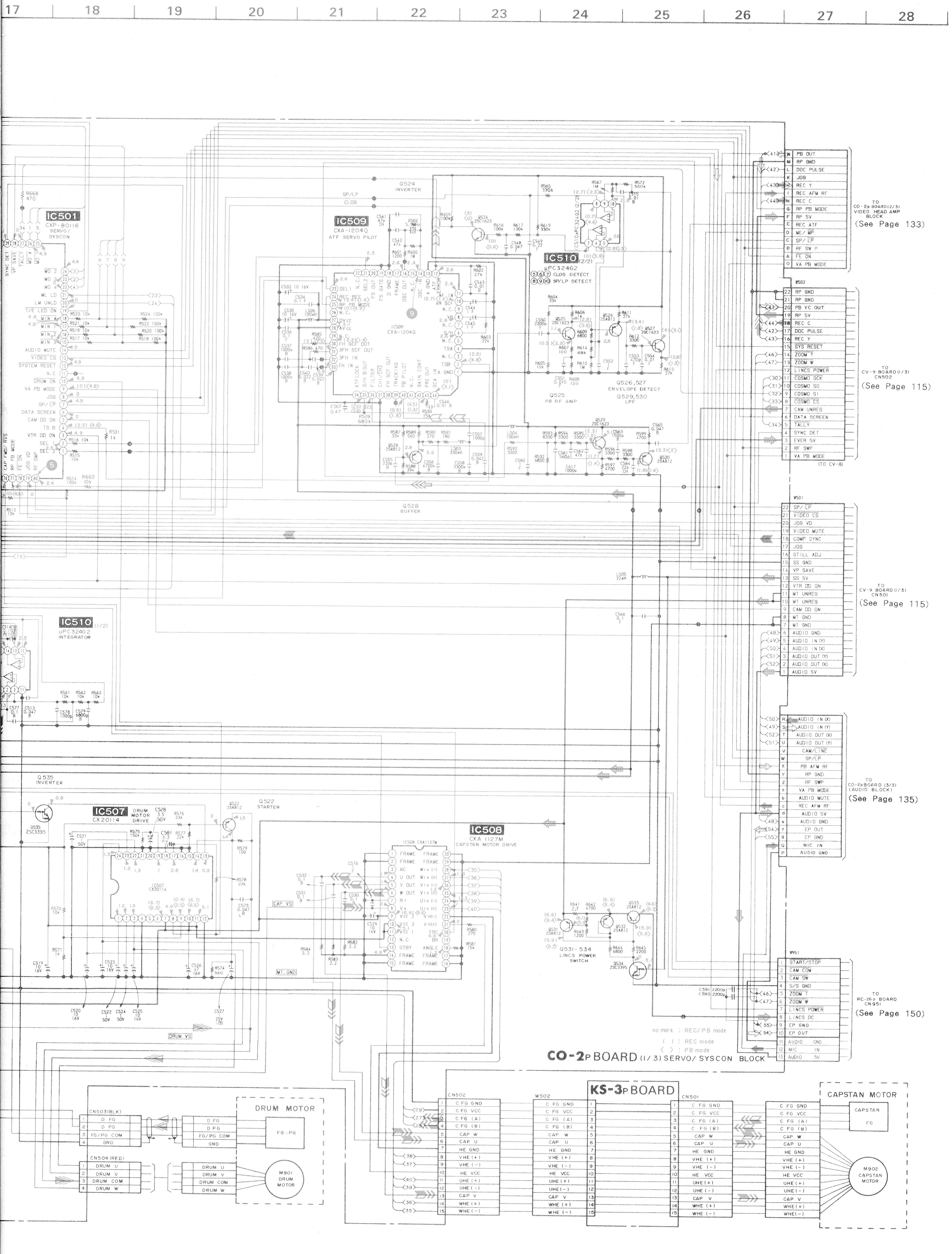
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡		➡⟫	➡
PB			⇨⟫	⇨

- Signal path

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		⊳>	
Drum servo (speed and phase)		⊳>>	
Capstan speed servo			
Capstan phase servo			⊃⟩
Capstan servo (speed and phase)			
Ref. signal	➡	➡⟫	⊃

STAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) SCHEMATIC DIAGRAMS


7
8
9
10
11
12
13
14
15
16
17
18
D003 1SS196
WS01
M OUT#
M OUT3
M OUT4
CC DOWN
END SENS
M IN#
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
CN501
TAPE TOP
Q503 2SC3898
TAPE END
Q504 2SC3898
D504 1SS196
M13
Q503 Q504,536 MATRIX INPUT
CC LOCK
Q536 2SC3898
CN507
MIN 5
MIN 4
MIN #
M OUT 4
M OUT 2
M OUT 1
M OUT #
VTR SW
SS GND
CAM SW
EJECT
EDIT
TO VK-1 BOARD W507
(See Page 149)
IC502 S-81350AG 5V REG
IC503 S-8054ALRS RESET
RS502 ICP-N10
SWITCH POSI
BATTERY DOWN
IC501 CXP-80116 SERVO/SYSCON
DEW
START/STOP
EJECT
LINES
BATT SENSE
STILL ADJ
SW POS ADJ
ATF ERROR
AV SS
AV REF
DRUM PG
CLOG
COMP
PB SP/LP
DRUM PG
DRUM FG
CAP FG
CAM/LINE
VIDEO MUTE
ML LD
LM UNLD
T/E LED ON
AUDIO MUTE
VIDEO CS
SYSTEM RESET
DRUM ON
VA PB MODE
JOG
SP/LP
DATA SCREEN
CAM DD ON
TS B
VTR DD ON
SEL 1
SEL 2
X501 16MHz
D505 1SS196
Q515-517,537,538 -DEW DETECT-
DEW
DEW SENSOR
CN506 (WHT)
Q520 2SB1240A
PS503 ICP-N20
Q521 2SC1623
IC505 µPC358G2 VOLTAGE ERROR AMP
IC510 µPC324G2 INTEGRATOR
END
TOP
Q518,539 TAPE END DETECT
Q519,540 TAPE TOP DETECT
Q535 INVERTER
Q535 2SC3395
Q506 C FG AMP
C FG SHAPER
Q623 1S2835
IC506 CX20115A WAVE SHAPER
IC504 LB1631MT LOADING MOTOR DRIVE
IC507 CX20114
M903 LOADING MOTOR
CN505 (RED)
LM LOAD
LM UNLOAD
Q624,625 SWITCH
Q626,627 PWM POWER DRIVE
Q628 PROTECTION DETECTOR
IC621 MB3775PF PULSE WIDTH MODULATION
Q622,623 PWM POWER DRIVE
Q621 SWITCH
Q621 2SC3396
FREQUENCY
CN503 (BLK)
D FG
D PG
FG/PG COM
GND
CN504 (RED)
DRUM U
DRUM V
DRUM COM
DRUM W
Signal
Y/CHROMA
AUDIO Signal
REC
REC/PB
PB
hase)
phase)

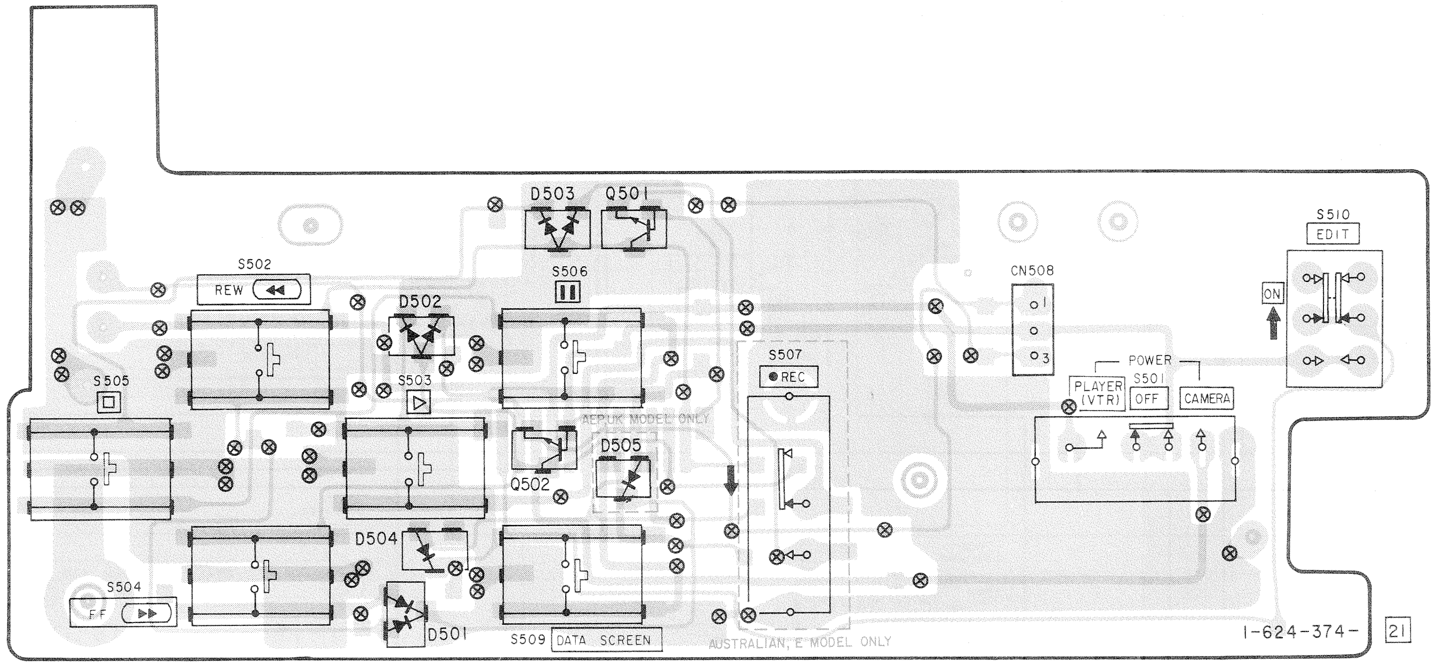


17
18
19
20
21
22
23
24
25
26
27
28
IC501
CXP-80116
SERVO/
SYSCON
IC509
CXA-1204Q
ATF SERVO PILOT
Q524
INVERTER
IC510 (2/2)
μPC324G2
CLOG DETECT
SP/LP DETECT
Q525
PB RF AMP
Q526,527
ENVELOPE DETECT
Q529,530
LPF
Q528
BUFFER
IC510 (1/2)
μPC324G2
INTEGRATOR
Q535
INVERTER
IC507
CX20114
DRUM MOTOR DRIVE
Q522
STARTER
IC508
CXA1127M
CAPSTAN MOTOR DRIVE
Q531-534
LINCS POWER SWITCH
CAP VS
MT. GND
DRUM VS
TO
CO-2p BOARD (2/3)
VIDEO HEAD AMP
BLOCK
(See Page 133)
TO
CV-9 BOARD (1/3)
CN502
(See Page 115)
TO
CV-9 BOARD (1/3)
CN501
(See Page 115)
TO
CO-2p BOARD (3/3)
(AUDIO BLOCK)
(See Page 135)
TO
RC-26p BOARD
CN951
(See Page 150)
(TO CV-8)
no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode
CO-2P BOARD (1/3) SERVO/ SYSCON BLOCK
KS-3P BOARD
CN503 (BLK)
CN504 (RED)
CN502
W502
CN501
W501
W951
DRUM MOTOR
FG-PG
M901
DRUM
MOTOR
CAPSTAN MOTOR
CAPSTAN
FG
M902
CAPSTAN
MOTOR
PB OUT
RP GND
DOC PULSE
JOG
REC Y
REC AFM RF
REC C
RP PB MODE
RP 5V
REC ATF
ME/MP
SP/LP
RF SW P
FE ON
VA PB MODE
PB YC OUT
SYS RESET
ZOOM T
ZOOM W
LINCS POWER
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
CAM UNREG
DATA SCREEN
TALLY
SYNC DET
EVER 5V
RF SWP
VIDEO CS
JOG VD
VIDEO MUTE
COMP SYNC
STILL ADJ
SS GND
VP SAVE
SS 5V
VTR DD ON
MT UNREG
CAM DD ON
MT GND
AUDIO GND
AUDIO IN (Y)
AUDIO IN (X)
AUDIO OUT (Y)
AUDIO OUT (X)
AUDIO 5V
CAM/LINE
PB AFM RF
EP OUT
EP GND
MIC IN
START/STOP
CAM COM
CAM SW
S/S GND
LINCS DC
D FG
D PG
FG/PG COM
GND
DRUM U
DRUM V
DRUM COM
DRUM W
C FG GND
C FG VCC
C FG (A)
C FG (B)
CAP W
CAP U
HE GND
VHE (+)
VHE (−)
HE VCC
UHE (+)
UHE (−)
CAP V
WHE (+)
WHE (−)

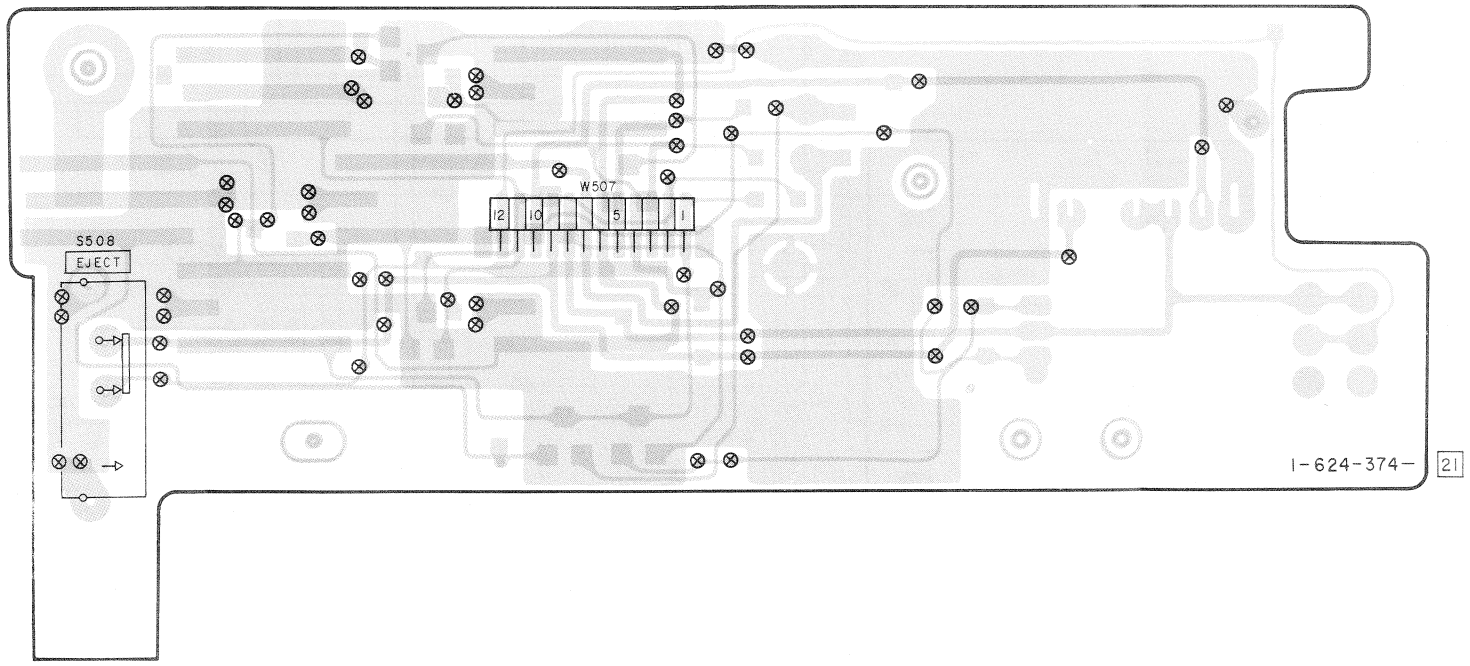
MA-31P (MIC AMP), RC-26P (START/STOP SWITCH), VK-1P (VIDEO FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. MA-31P, VK-1P BOARDS : 8000 series, RC-26P, BOARD : 9000 series —

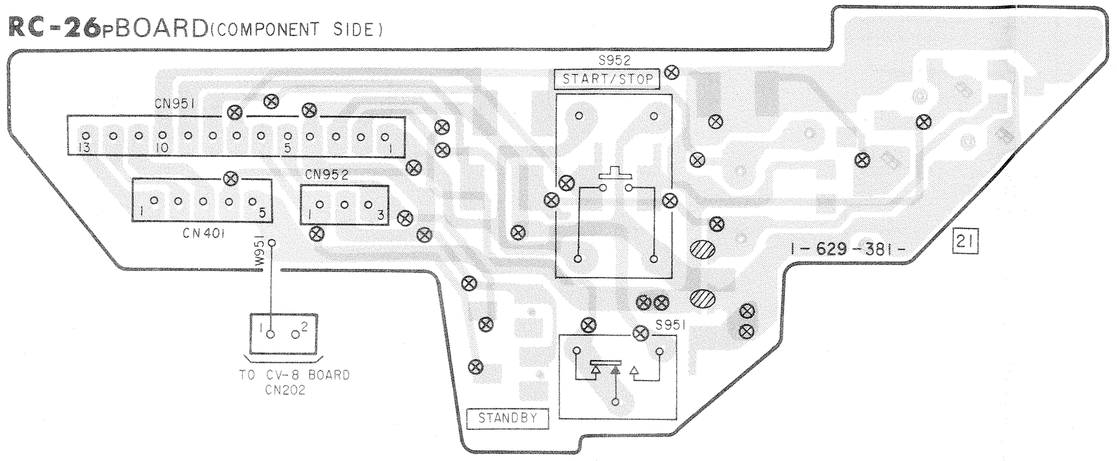
VK-1P BOARD (COMPONENT SIDE)


S502
REW
S505
S504
F.F
D503
Q501
S506
D502
S503
D504
D501
Q502
D505
AEP, UK MODEL ONLY
S509 DATA SCREEN
AUSTRALIAN, E MODEL ONLY
S507
● REC
CN508
POWER
S501
PLAYER (VTR)
OFF
CAMERA
S510
EDIT
ON
1-624-374-
21

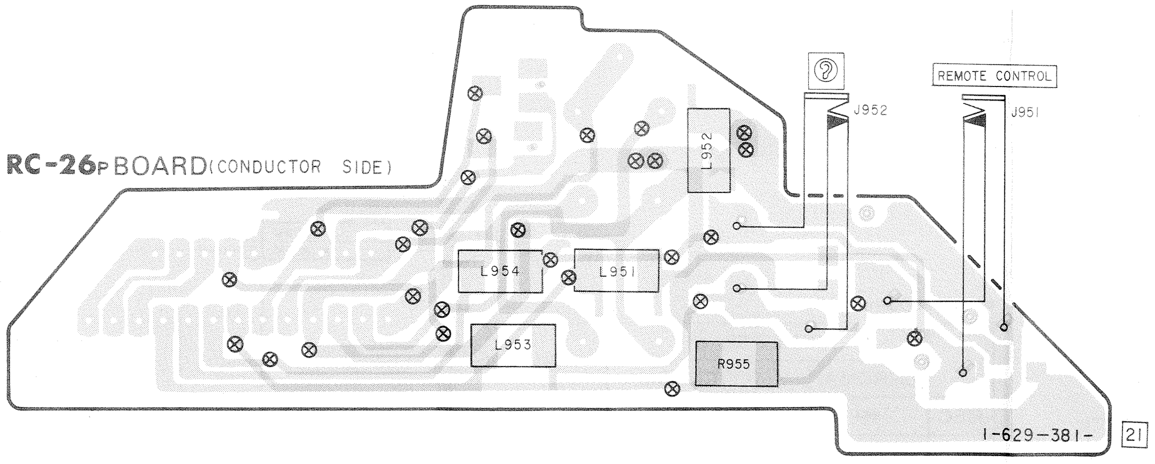
VK-1P BOARD (CONDUCTOR SIDE)

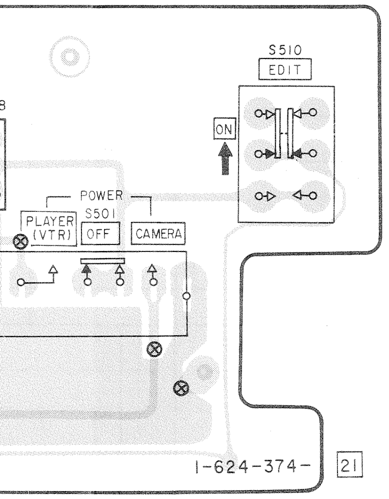

S508
EJECT
W507
12
10
5
1
1-624-374-
21

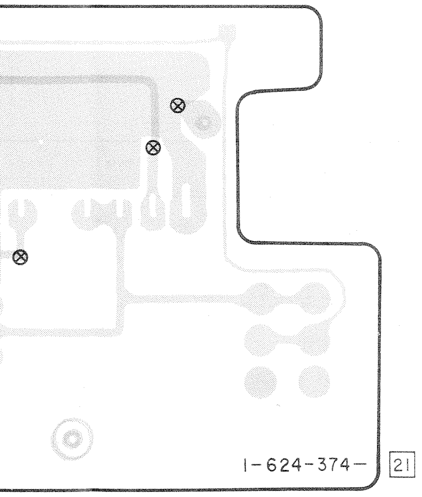
RC-26P BOARD (COMPONENT SIDE)


CN951
13
10
5
1
CN401
CN952
W951
TO CV-8 BOARD CN202
S952
START/STOP
S951
STANDBY
1-629-381-
21

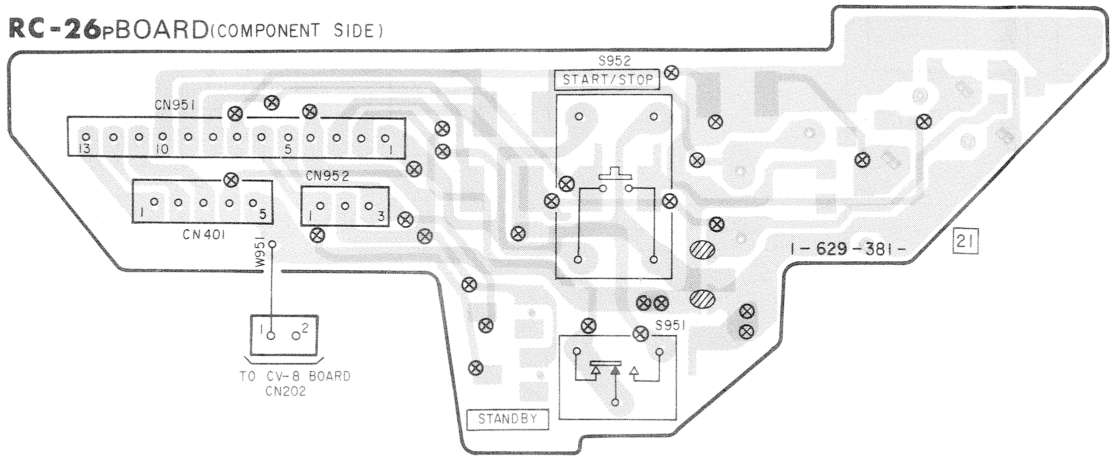
RC-26P BOARD (CONDUCTOR SIDE)


REMOTE CONTROL
J952
J951
L952
L954
L951
L953
R955
1-629-381-
21

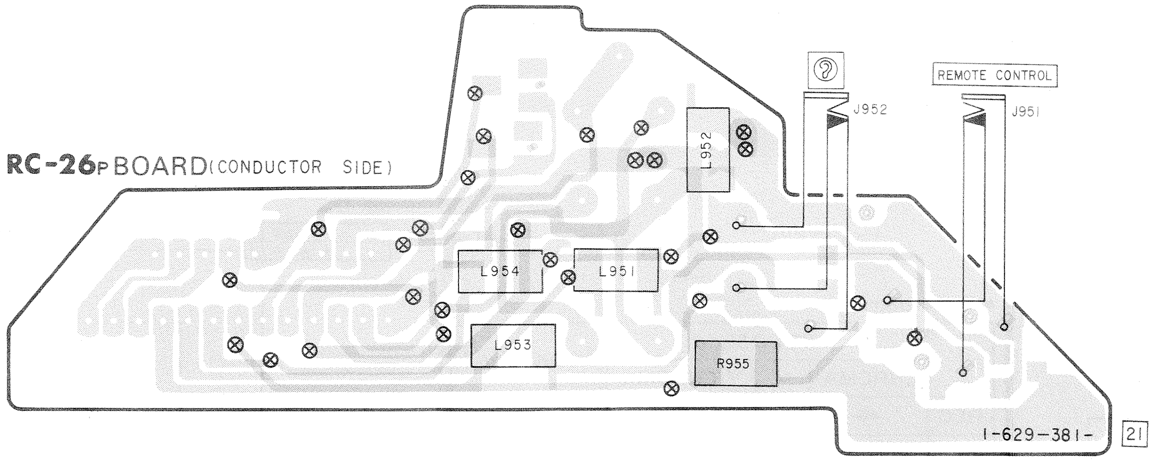

S510
EDIT
ON
POWER
S501
PLAYER (VTR)
OFF
CAMERA
1-624-374-
21



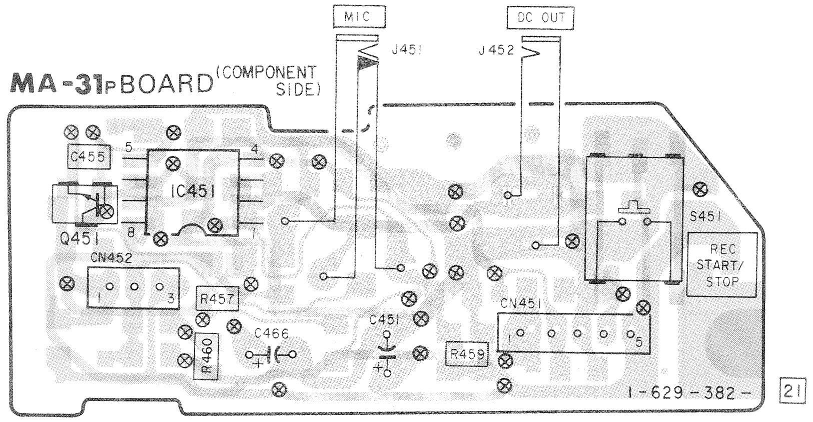
RC-26P BOARD (COMPONENT SIDE)


CN951
13
10
5
1
CN401
1
5
CN952
1
3
W951
S952
START/STOP
S951
STANDBY
TO CV-8 BOARD CN202
1
2
1-629-381-
21

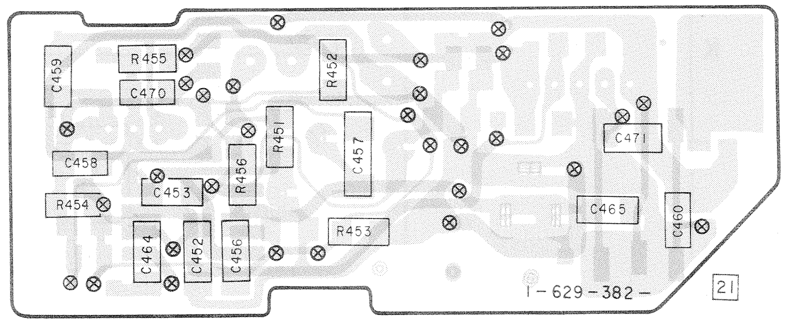
RC-26P BOARD (CONDUCTOR SIDE)


J952
REMOTE CONTROL
J951
L952
L954
L951
L953
R955
1-629-381-
21

MA-31P BOARD (COMPONENT SIDE)

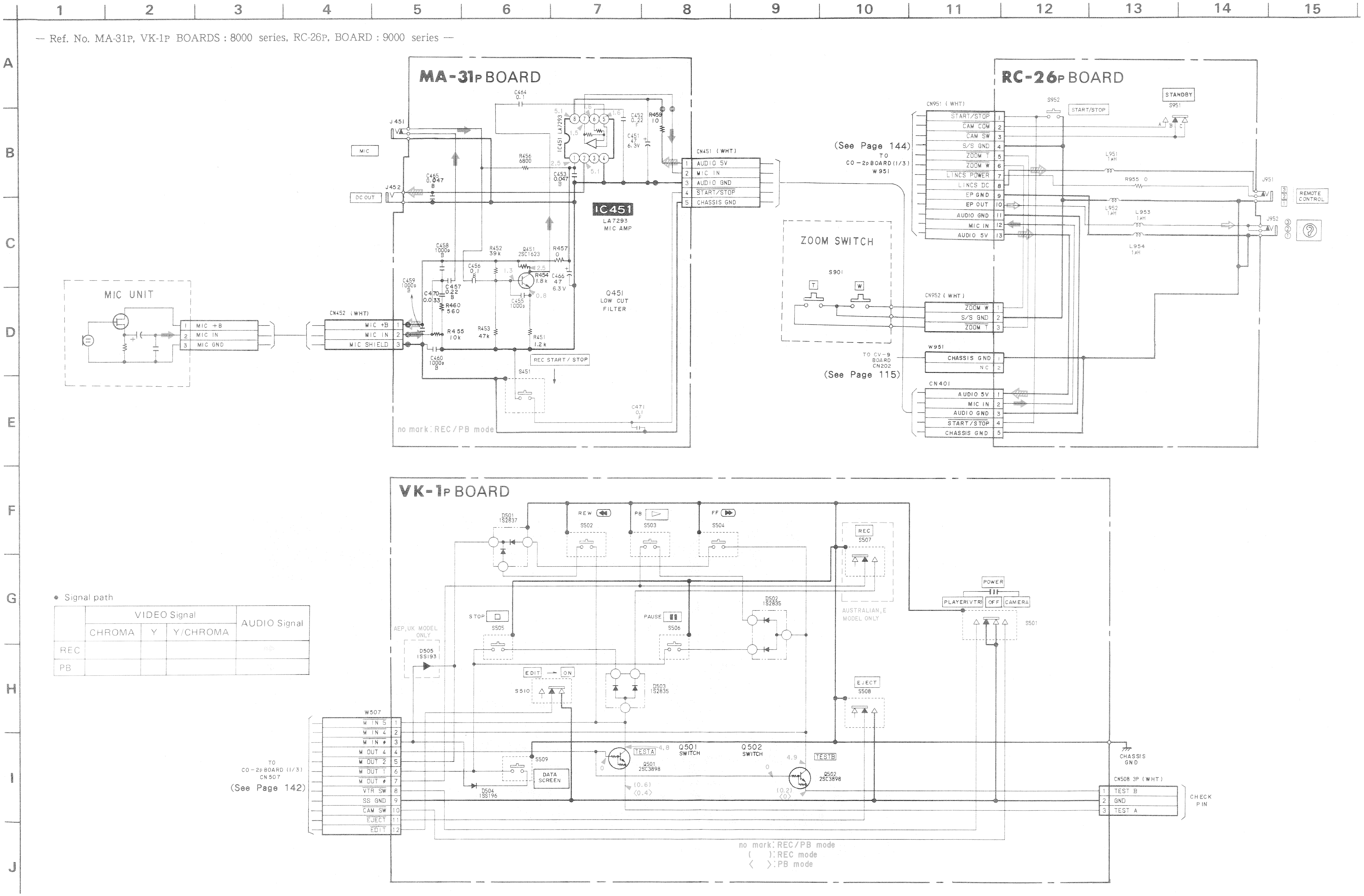

MIC
DC OUT
J451
J452
C455
5
4
IC451
8
1
Q451
CN452
1
3
R457
R460
C466
C451
R459
CN451
1
5
S451
REC START/STOP
1-629-382-
21

MA-31P BOARD (CONDUCTOR SIDE)


C459
R455
C470
R452
R451
C457
C471
C458
R456
C453
R454
C465
C460
R453
C464
C452
C456
1-629-382-
21

MA-31P (MIC AMP), RC-26P (START/STOP SWITCH), VK-1P (VIDEO FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. MA-31P, VK-1P BOARDS : 8000 series, RC-26P, BOARD : 9000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
MIC UNIT
1 MIC +B
2 MIC IN
3 MIC GND
MA-31P BOARD
J451
MIC
J452
DC OUT
C464 0.1
IC451 LA7293
5.1
1.5
1.6
C452 0.22 F
R459 10
C451 47 6.3V
R456 6800
2.5
C465 0.047 B
C453 0.047 B
CN451 (WHT)
1 AUDIO 5V
2 MIC IN
3 AUDIO GND
4 START/STOP
5 CHASSIS GND
IC451
LA7293
MIC AMP
C458 1000p B
R452 39k
Q451 2SC1623
R457 0
C456 0.1 B
1.3
R454 1.8k
C466 47 6.3V
C459 1000p B
C457 0.22 B
C470 0.033
R460 560
C455 1000p
0.8
Q451
LOW CUT
FILTER
CN452 (WHT)
1 MIC +B
2 MIC IN
3 MIC SHIELD
R455 10k
R453 47k
R451 1.2k
C460 1000p B
REC START / STOP
S451
C471 0.1 F
no mark : REC/PB mode
RC-26P BOARD
(See Page 144)
TO
CO-2P BOARD (1/3)
W951
CN951 (WHT)
1 START/STOP
2 CAM COM
3 CAM SW
4 S/S GND
5 ZOOM T
6 ZOOM W
7 LINCS POWER
8 LINCS DC
9 EP GND
10 EP OUT
11 AUDIO GND
12 MIC IN
13 AUDIO 5V
S952
START/STOP
STANDBY
S951
A B C
L951 1μH
R955 0
J951
REMOTE CONTROL
L952 1μH
L953 1μH
J952
L954 1μH
ZOOM SWITCH
S901
T
W
CN952 (WHT)
1 ZOOM W
2 S/S GND
3 ZOOM T
W951
1 CHASSIS GND
2 NC
TO CV-9
BOARD
CN202
(See Page 115)
CN401
1 AUDIO 5V
2 MIC IN
3 AUDIO GND
4 START/STOP
5 CHASSIS GND
VK-1P BOARD
D501 1S2837
REW
S502
PB
S503
FF
S504
REC
S507
AUSTRALIAN, E MODEL ONLY
POWER
PLAYER(VTR)
OFF
CAMERA
S501
STOP
S505
AEP, UK MODEL ONLY
D505 1SS193
PAUSE
S506
D502 1S2835
EDIT → ON
S510
D503 1S2835
EJECT
S508
W507
1 M IN 5
2 M IN 4
3 M IN ø
4 M OUT 4
5 M OUT 2
6 M OUT 1
7 M OUT ø
8 VTR SW
9 SS GND
10 CAM SW
11 EJECT
12 EDIT
TO
CO-2P BOARD (1/3)
CN507
(See Page 142)
S509
DATA SCREEN
D504 1SS196
TESTA
4.8
Q501
SWITCH
Q501 2SC3898
0
(0.6)
〈0.4〉
Q502
SWITCH
4.9
TESTB
Q502 2SC3898
(0.2)
〈0〉
CHASSIS GND
CN508 3P (WHT)
1 TEST B
2 GND
3 TEST A
CHECK PIN
no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode

• Signal path

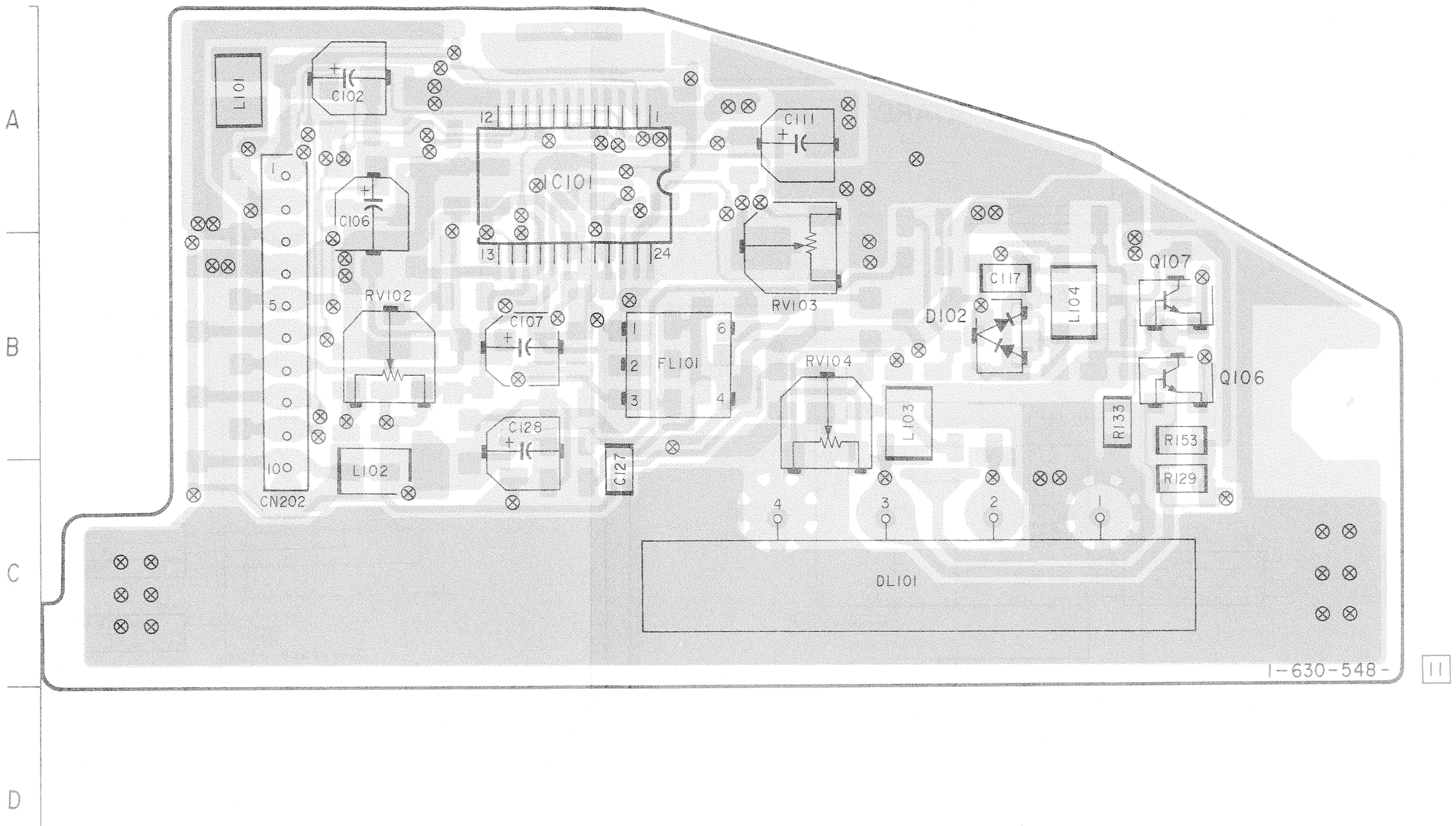
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				
PB				

PJ-20 (JOG CHROMA PROCESS) PRINTED WIRING BOARD

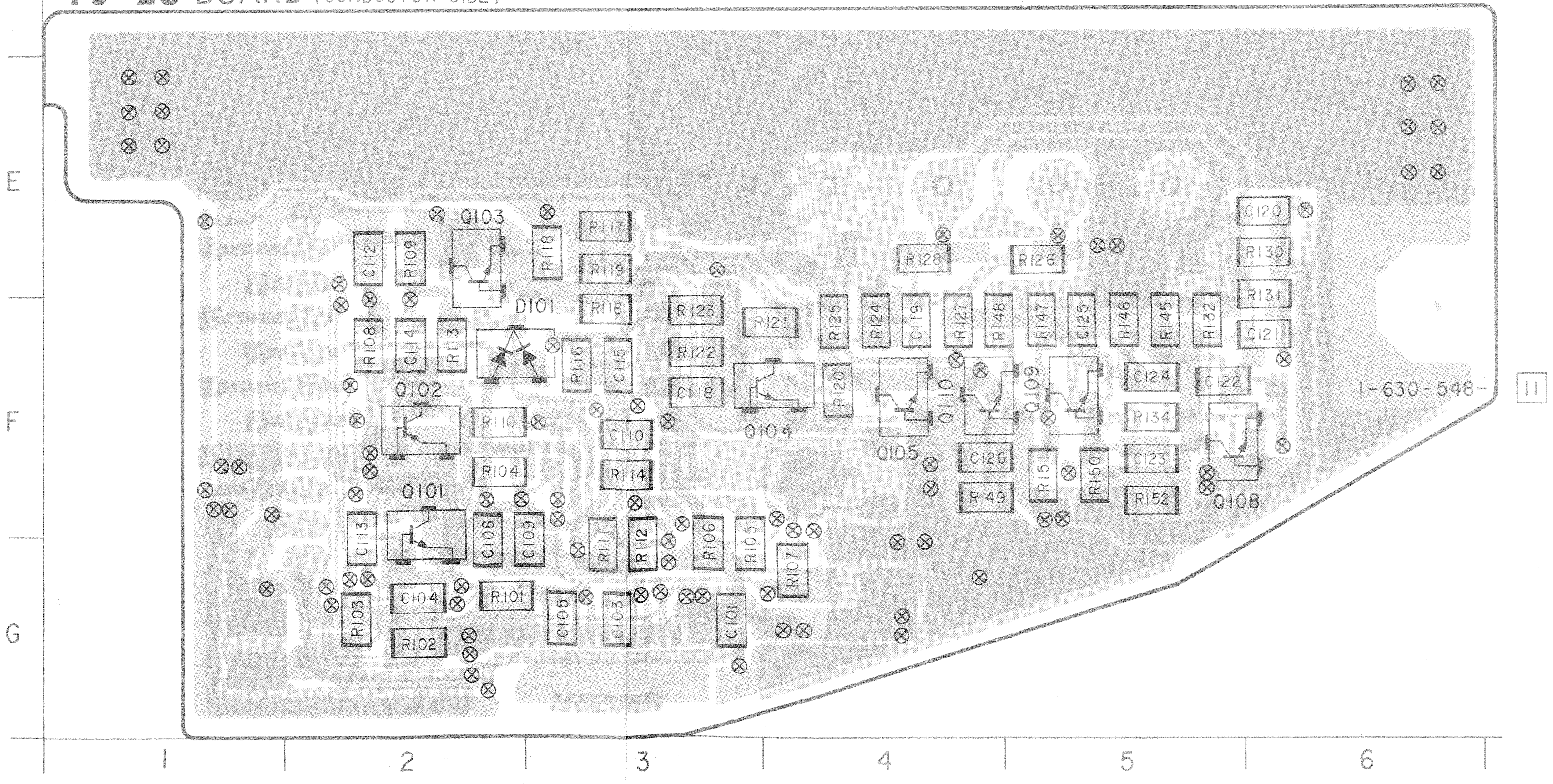
— Ref. No. PJ-20 BOARD : 4000 series —

PJ-20 BOARD	
CN202	B-2
D101	F-2
D102	B-5
IC101	A-3
Q101	
Q102	F-2
Q103	E-2
Q104	F-3
Q105	F-4
Q106	B-5
Q107	B-5
Q108	F-5
Q109	F-5
Q110	F-4
RV102	B-2
RV103	B-4
RV104	B-4

PJ-20 BOARD (COMPONENT SIDE)

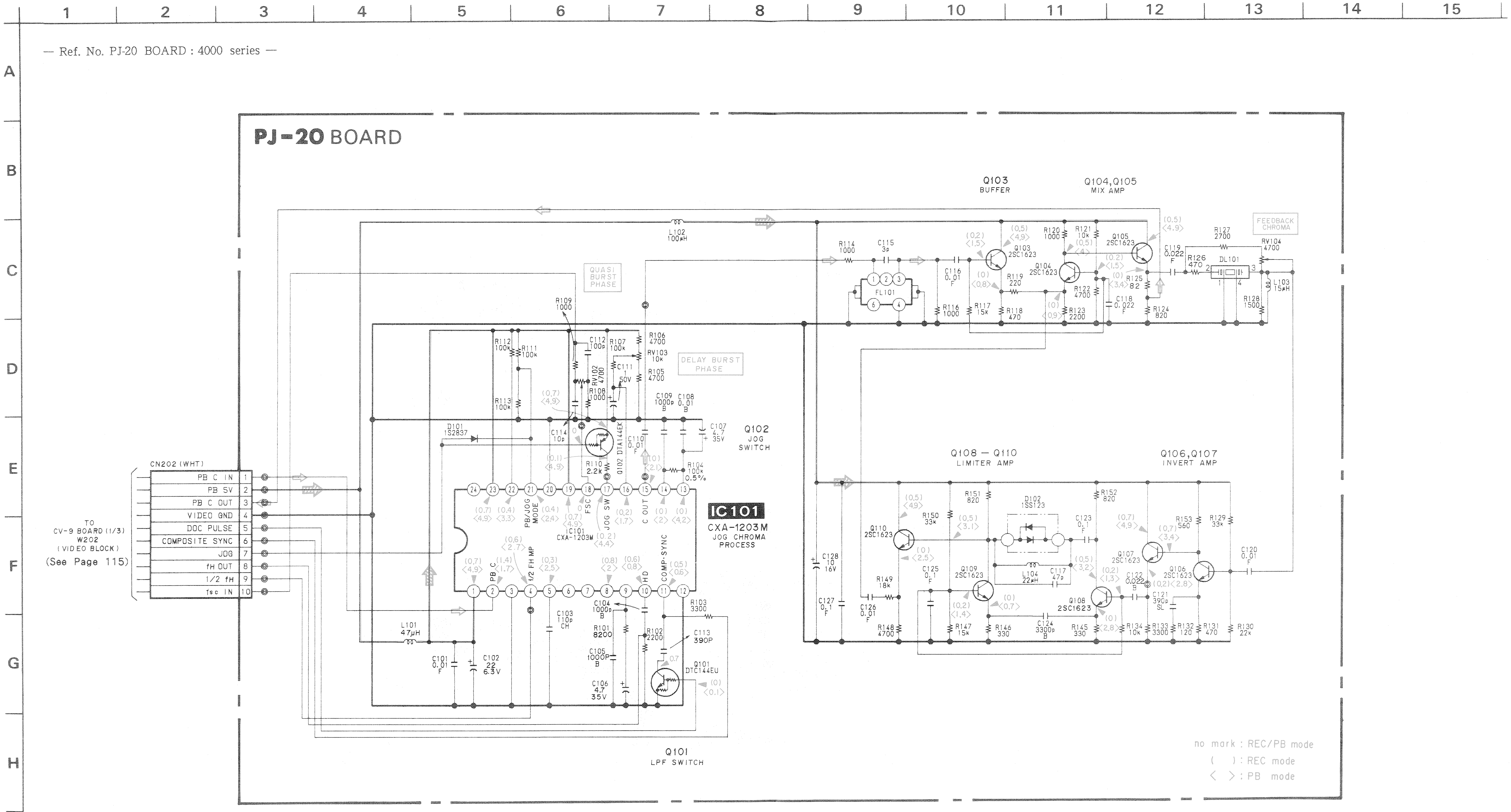

A
B
C
D
L101
C102
12
IC101
13
24
C111
C106
CN202
1
50
100
RV102
C107
FL101
1
2
3
4
6
RV103
C117
L104
D102
Q107
Q106
RV104
L103
R133
R153
R129
C128
L102
C127
4
3
2
1
DL101
1-630-548-
11

PJ-20 BOARD (CONDUCTOR SIDE)


E
F
G
Q103
R117
R119
R118
R116
C112
R109
D101
R108
C114
R113
R116
C115
R123
R122
C118
R121
Q104
R125
R124
C119
R127
R148
R147
C125
R146
R145
R132
R128
R126
C120
R130
R131
C121
C124
C122
R134
R120
Q105
Q110
Q109
C126
R151
R150
C123
R149
R152
Q108
Q102
R110
C110
R104
R114
Q101
C113
C108
C109
R111
R112
R106
R105
R107
C104
R101
R103
R102
C105
C103
C101
1-630-548-
11
1
2
3
4
5
6

PJ-20 (JOG CHROMA PROCESS) SCHEMATIC DIAGRAM

— Ref. No. PJ-20 BOARD : 4000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
PJ-20 BOARD
TO CV-9 BOARD (1/3) W202 (VIDEO BLOCK) (See Page 115)
CN202 (WHT)
PB C IN 1
PB 5V 2
PB C OUT 3
VIDEO GND 4
DOC PULSE 5
COMPOSITE SYNC 6
JOG 7
fH OUT 8
1/2 fH 9
fsc IN 10
IC101
CXA-1203M
JOG CHROMA PROCESS
PB/JOG MODE
FSC
JOG SW
C OUT
COMP-SYNC
HD
PB C
1/2 FH MP
Q101 LPF SWITCH
DTC144EU
Q102 JOG SWITCH
DTA144EK
Q103 BUFFER
Q104,Q105 MIX AMP
Q106,Q107 INVERT AMP
Q108 — Q110 LIMITER AMP
2SC1623
QUASI BURST PHASE
DELAY BURST PHASE
FEEDBACK CHROMA
L101 47μH
L102 100μH
L103 15μH
L104 22μH
D101 1S2837
D102 1SS123
DL101
FL101
RV102 4700
RV103 10k
RV104 4700
R101 8200
R102 2200
R103 3300
R104 100k 0.5%
R105 4700
R106 4700
R107 100k
R108 1000
R109 1000
R110 2.2k
R111 100k
R112 100k
R113 100k
R114 1000
R116 1000
R117 15k
R118 470
R119 220
R120 1000
R121 10k
R122 4700
R123 2200
R124 820
R125 82
R126 470
R127 2700
R128 1500
R129 33k
R130 22k
R131 470
R132 120
R133 3300
R134 10k
R145 330
R146 330
R147 15k
R148 4700
R149 18k
R150 33k
R151 820
R152 820
R153 560
C101 0.01 F
C102 22 6.3V
C103 110p CH
C104 1000p B
C105 1000P B
C106 4.7 35V
C107 4.7 35V
C108 0.01 B
C109 1000p B
C110 0.01 F
C111 1 50V
C112 100p
C113 390P
C114 10p
C115 3p
C116 0.01 F
C117 47p
C118 0.022 F
C119 0.022 F
C120 0.01 F
C121 390p SL
C122 0.022 B
C123 0.1 F
C124 3300p B
C125 0.1 F
C126 0.01 F
C127 0.1 F
C128 10 16V

no mark : REC/PB mode
( ) : REC mode
〈 〉: PB mode

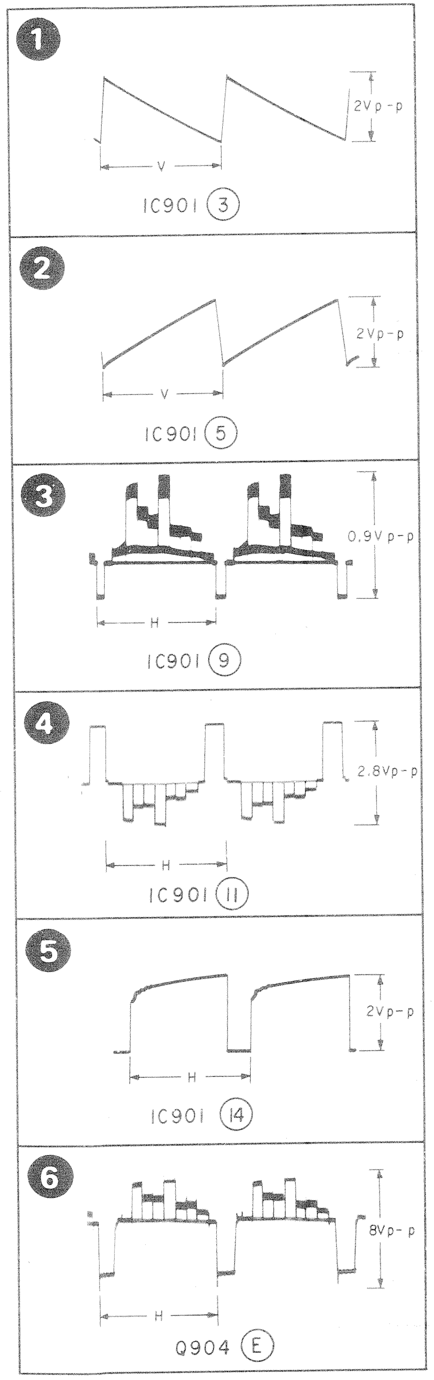
● Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				
PB	⇨			

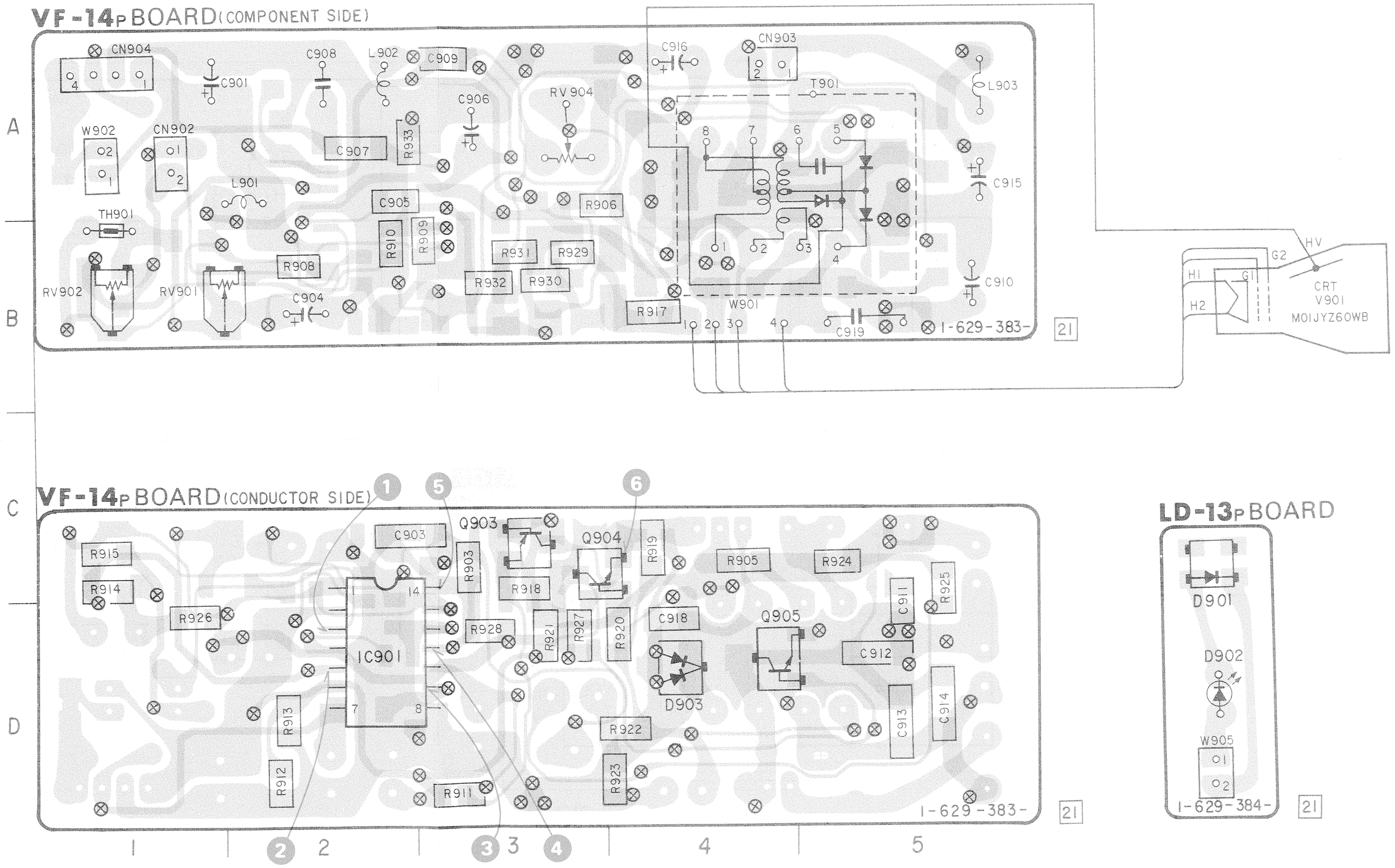
VF-14P (ELECTRONIC VIEW FIDER), LD-13P (TALLY LED) PRINTED WIRING BOARDS

— Ref. No. VF-14P BOARD : 6000 series, LD-13P BOARD : 7000 series —

VF-14P BOARD



VF-14P BOARD	
CN902	A-1
CN903	A-4
CN904	A-1
D903	D-4
IC901	D-2
Q902	B-3
Q903	C-3
Q904	C-3
Q905	D-4
RV901	B-1
RV902	B-1
RV904	A-3
W901	B-4
W902	A-1

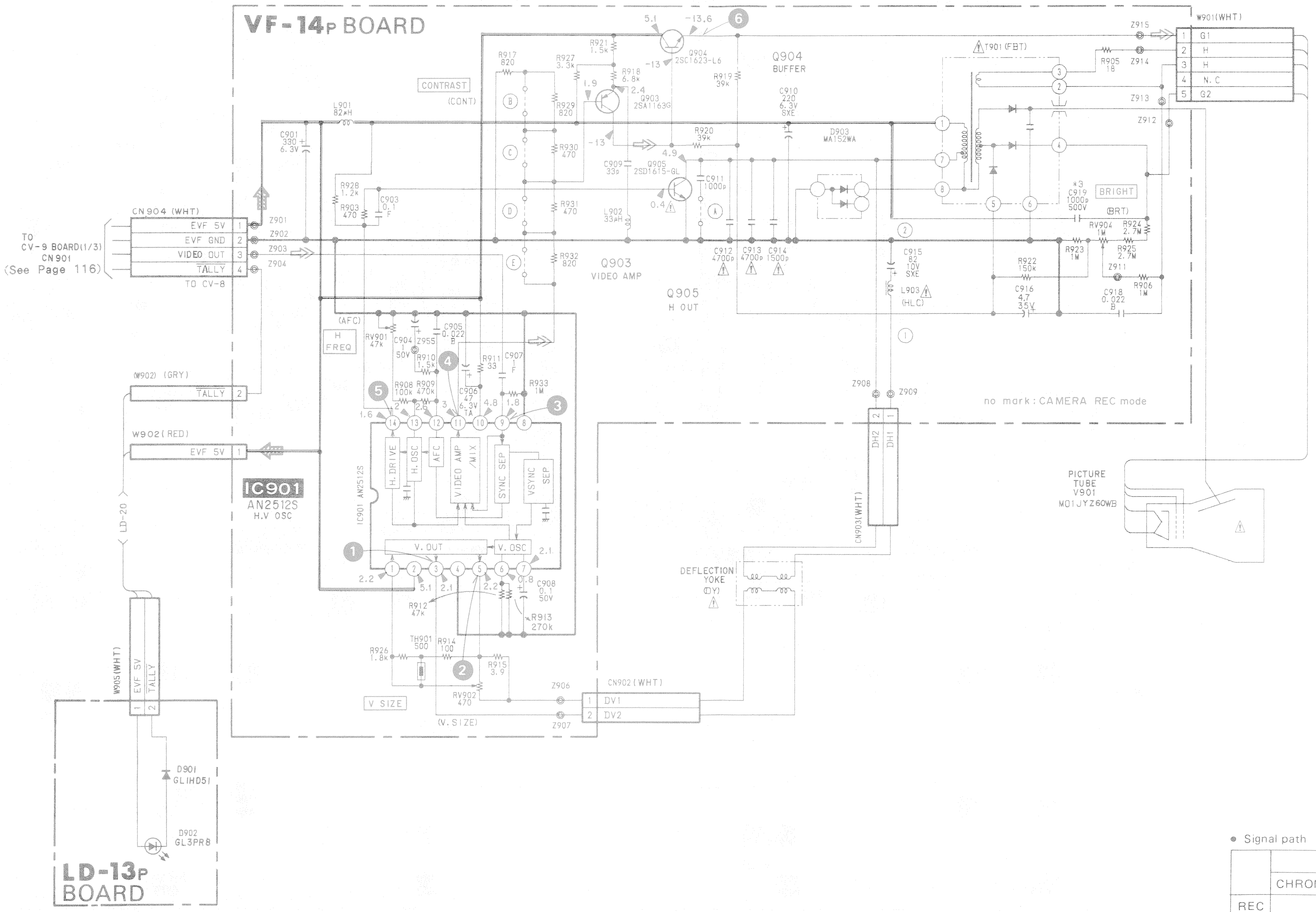


VF-14P BOARD (COMPONENT SIDE)
A
B
C
D
CN904
C901
C908
L902
C909
C916
CN903
L903
T901
W902
CN902
C906
RV904
C907
R933
L901
C905
R906
C915
TH901
R910
R909
R931
R929
RV902
RV901
R908
R932
R930
C910
C904
R917
W901
C919
1-629-383-
21
HV
G2
H1
G1
H2
CRT
V901
M01JYZ60WB
VF-14P BOARD (CONDUCTOR SIDE)
1
5
6
C903
Q903
Q904
R919
R905
R924
R915
R903
R914
R918
R925
C911
R926
IC901
R928
R921
R927
R920
C918
Q905
C912
D903
R913
R922
C913
C914
R912
R911
R923
1-629-383-
21
2
3
4
1
2
3
4
5

LD-13P BOARD
D901
D902
W905
1
2
1-629-384-
21

VF-14P (ELECTRONIC VIEW FIDER), LD-13P (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-14P BOARD : 6000 series, LD-13P BOARD : 7000 series —



VF-14P BOARD
CN904 (WHT)
EVF 5V
EVF GND
VIDEO OUT
TALLY
TO CV-8
TO CV-9 BOARD(1/3) CN901
(See Page 116)
Z901
Z902
Z903
Z904
C901 330 6.3V
L901 82μH
R928 1.2k
R903 470
C903 0.1 F
CONTRAST
(CONT)
R917 820
R927 3.3k
R921 1.5k
R918 6.8k
R929 820
R930 470
R931 470
R932 820
Q903 2SA1163G
Q903 VIDEO AMP
Q904 2SC1623-L6
Q904 BUFFER
Q905 2SD1615-GL
Q905 H OUT
R919 39k
R920 39k
C909 33p
C911 1000p
L902 33μH
C910 220 6.3V SXE
C912 4700p
C913 4700p
C914 1500p
D903 MA152WA
C915 82 10V SXE
L903 (HLC)
T901 (FBT)
R905 18
Z915
Z914
Z913
Z912
W901(WHT)
G1
H
H
N.C
G2
C919 1000p 500V
BRIGHT
(BRT)
RV904 1M
R924 2.7M
R925 2.7M
R923 1M
R922 150k
C916 4.7 35V
Z911
R906 1M
C918 0.022 B
Z908
Z909
no mark : CAMERA REC mode
DH2
DH1
CN903(WHT)
PICTURE TUBE V901 M01JYZ60WB
DEFLECTION YOKE (DY)
(AFC)
H FREQ
RV901 47k
C904 50V
Z955
C905 0.022 B
R910 1.5k
R911 33
C907 1 F
R933 1M
R908 100k
R909 470k
C906 47 6.3V TA
IC901 AN2512S
IC901 AN2512S H.V OSC
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
C908 0.1 50V
R912 47k
R913 270k
TH901 500
R914 100
R915 3.9
R926 1.8k
V SIZE
RV902 470
(V.SIZE)
Z906
Z907
CN902 (WHT)
DV1
DV2
(W902) (GRY)
TALLY
W902 (RED)
EVF 5V
LD-20
W905(WHT)
EVF 5V
TALLY
D901 GL1HD51
D902 GL3PR8
LD-13P BOARD

● Signal path

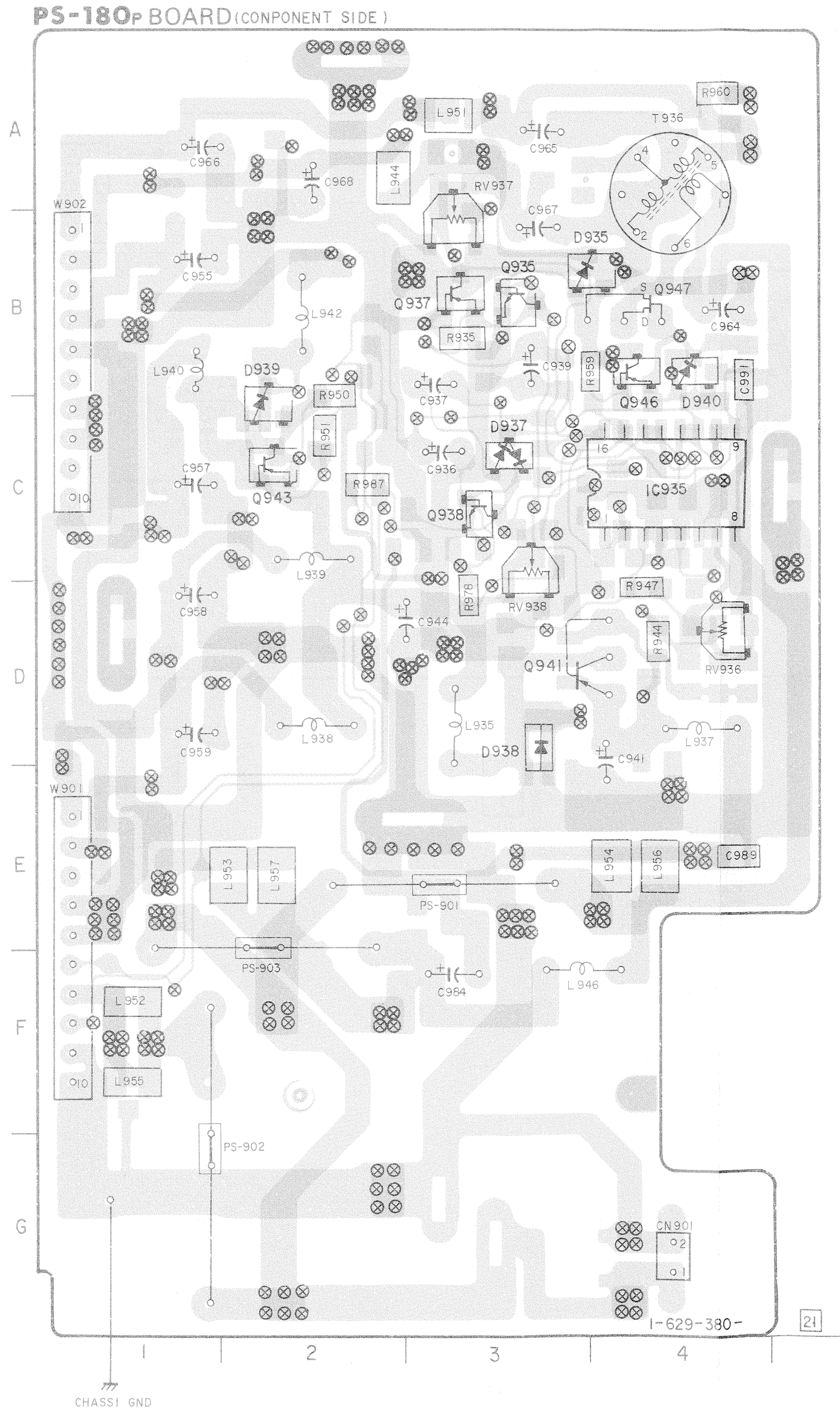
	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

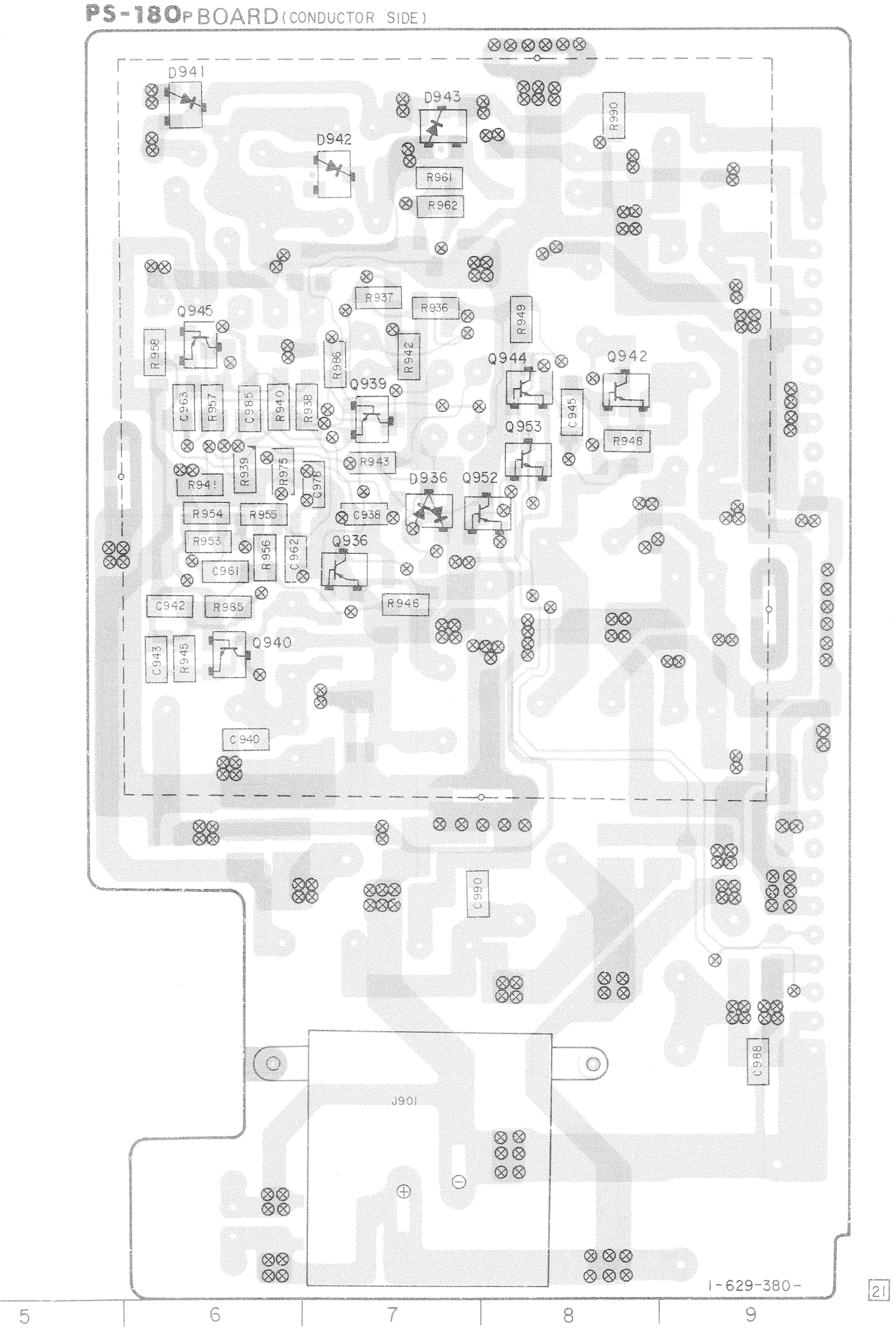
PS-180P (POWER SUPPLY) PRINTED WIRING BOARDS

— Ref. No. PS-180P BOARD : 4000 series —

PS-180P BOARD

CN901	G-4
D935	B-4
D936	C-7
D937	C-3
D938	D-3
D939	C-2
D940	C-4
D941	A-6
D942	A-7
D943	A-7
IC935	C-4
Q935	B-3
Q936	C-7
Q937	B-3
Q938	C-3
Q939	C-7
Q940	D-6
Q941	D-4
Q942	C-8
Q943	C-2
Q944	B-8
Q945	C-6
Q946	C-4
Q947	B-4
Q952	C-8
Q953	C-8
RV936	D-4
RV937	B-3
RV938	D-3
W901	E-1
W902	B-1

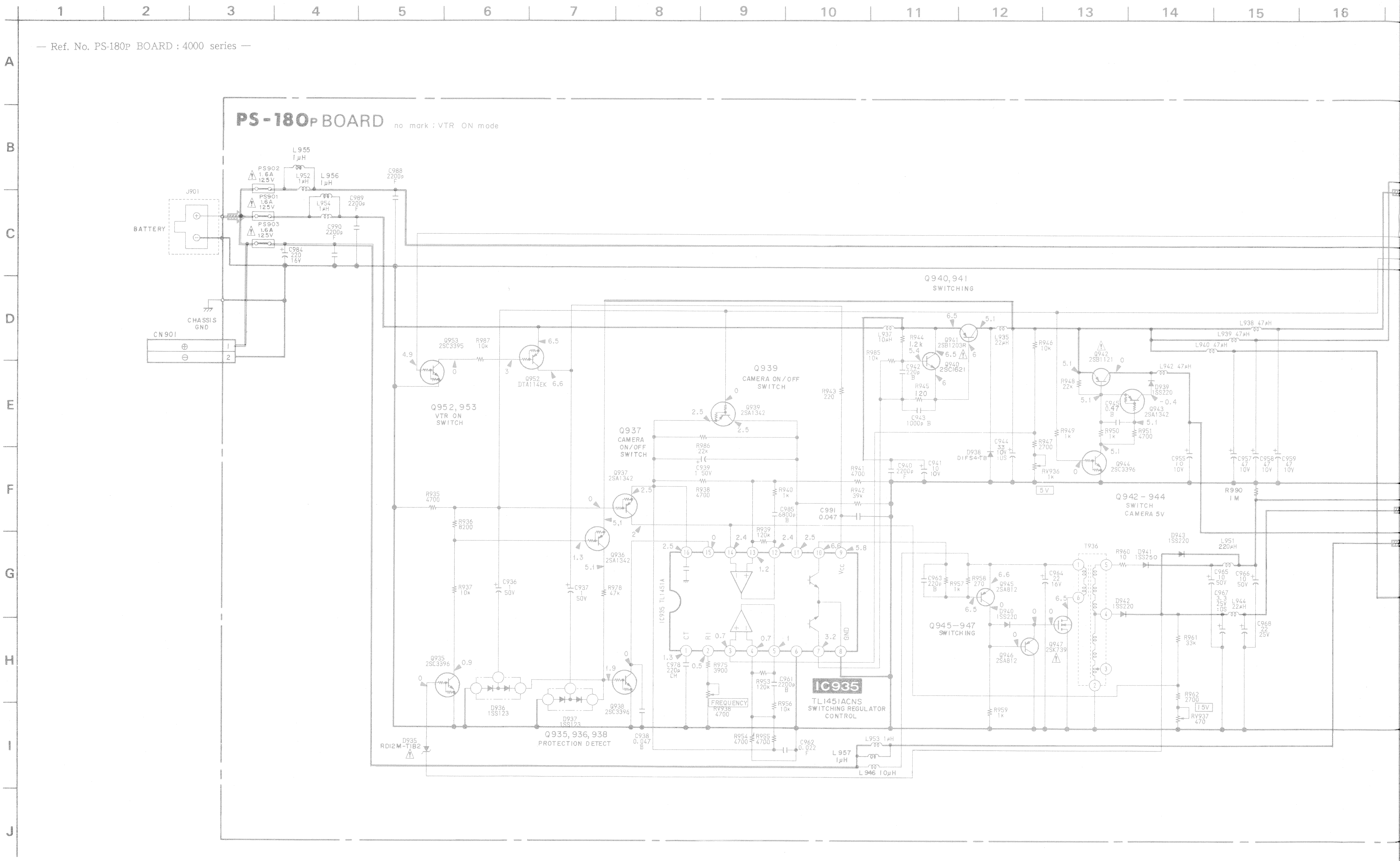

PS-180P BOARD (COMPONENT SIDE)
A
B
C
D
E
F
G
1
2
3
4
W902
W901
T936
L951
L944
RV937
C965
C966
C968
C967
D935
Q935
Q937
Q947
R935
C955
L942
L940
D939
R950
R951
C937
C939
R959
Q946
D940
C991
C964
D937
C936
IC935
16
9
8
C957
Q943
R987
Q938
L939
RV938
R978
R947
C958
C944
Q941
R944
RV936
L938
L935
D938
C941
L937
C959
R960
L953
L957
PS-901
L954
L956
C989
PS-903
C964
L946
L952
L955
PS-902
CN901
1-629-380-
21
CHASSI GND


PS-180P BOARD (CONDUCTOR SIDE)
5
6
7
8
9
D941
D943
D942
R990
R961
R962
R937
R936
Q945
R958
R949
R942
R986
Q944
Q942
Q939
C963
R957
C985
R940
R938
C945
R948
Q953
R941
R939
R975
R976
R943
D936
Q952
R954
R955
C938
R953
R956
C962
Q936
C961
C942
R985
R946
C943
R945
Q940
C940
C990
J901
C988
1-629-380-
21

POWER POWER

PS-180P (POWER SUPPLY) SCHEMATIC DIAGRAMS

— Ref. No. PS-180P BOARD : 4000 series —


1
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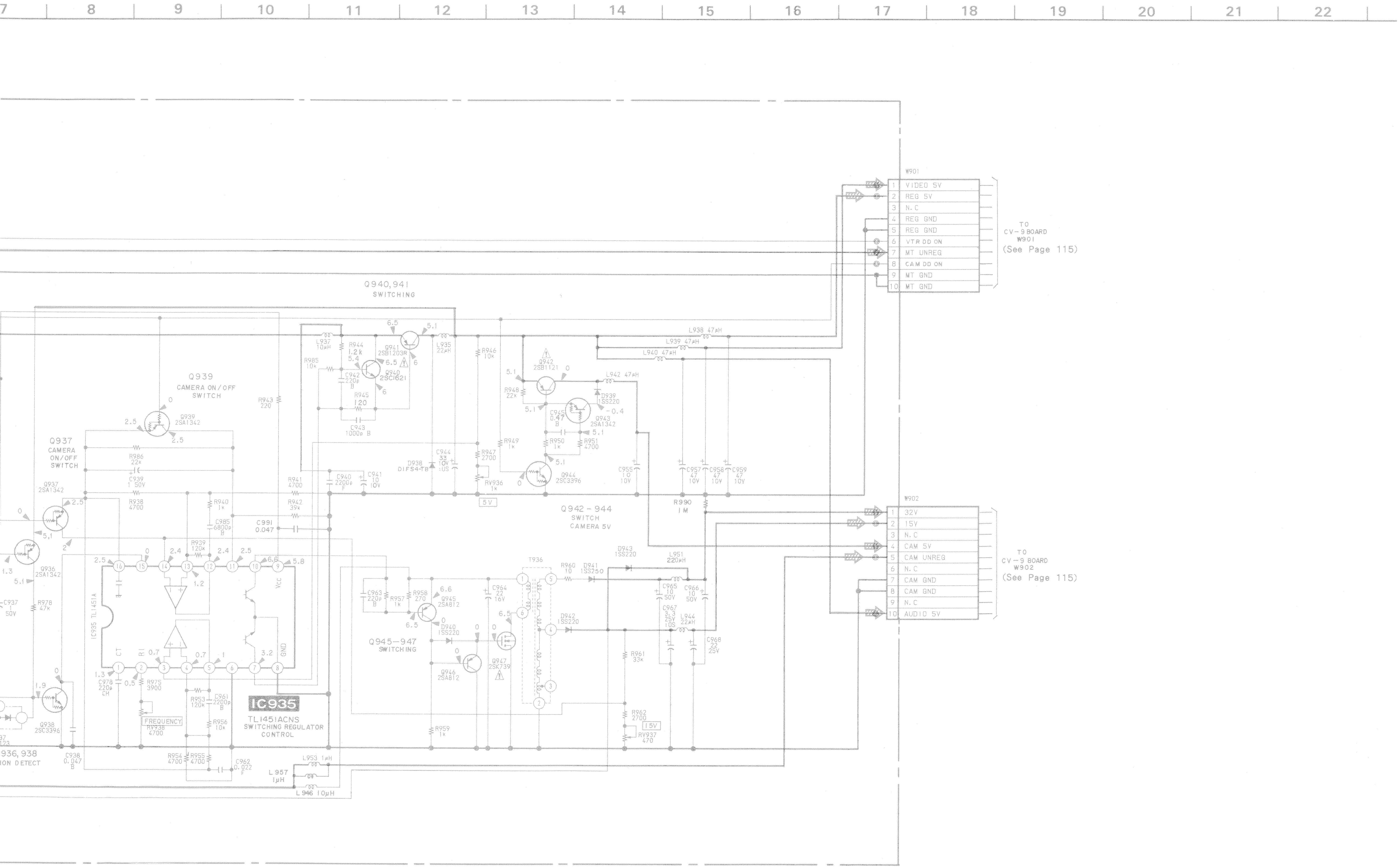
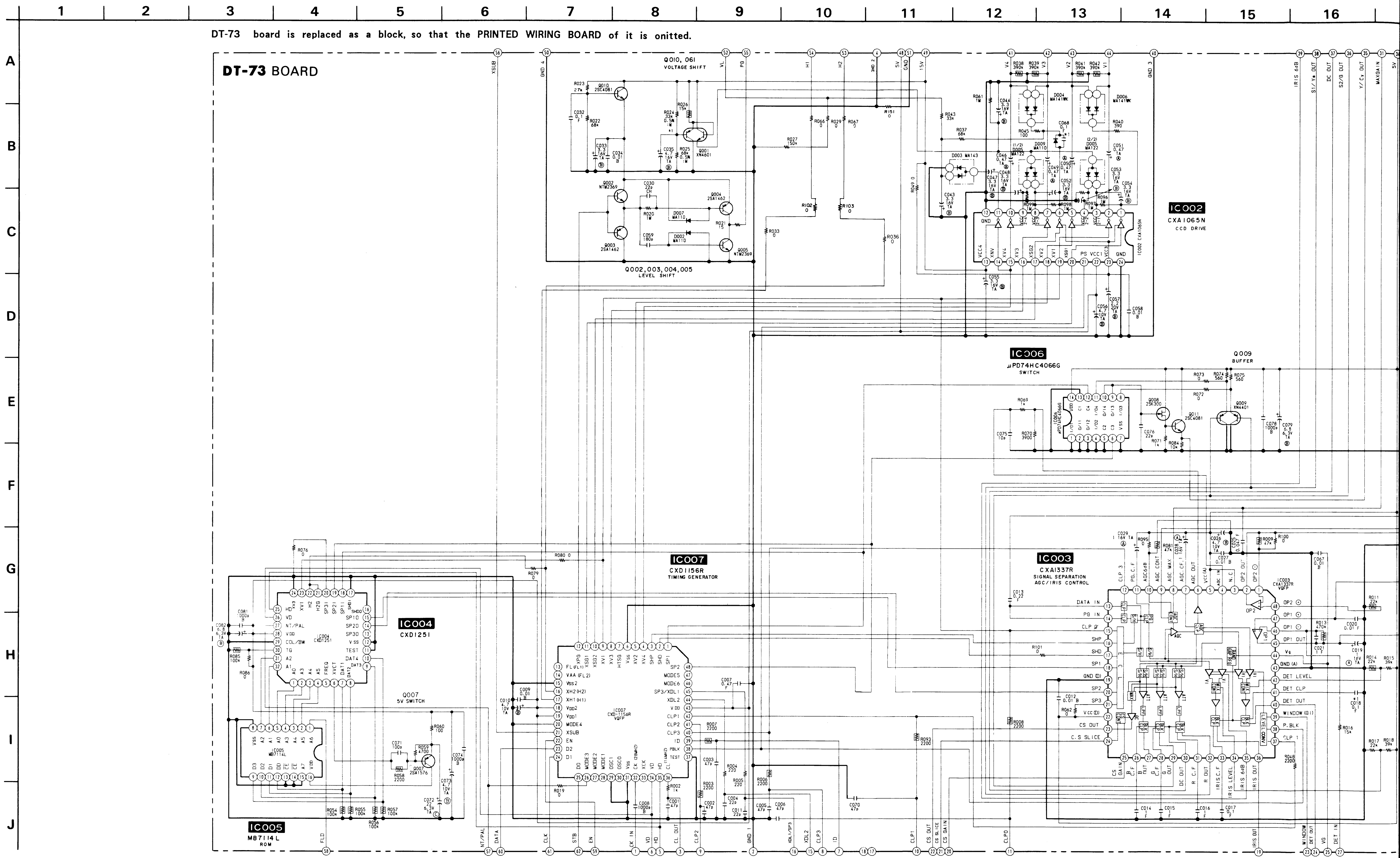
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
PS-180P BOARD
no mark : VTR ON mode
J901
BATTERY
CHASSIS GND
CN901
PS902 1.6A 125V
PS901 1.6A 125V
PS903 1.6A 125V
L955 1μH
L952 1μH
L956 1μH
L954 1μH
C988 2200p F
C989 2200p F
C990 2200p F
C984 220 16V
Q940, 941 SWITCHING
Q953 2SC3395
R987 10k
Q952 DTA114EK
Q952, 953 VTR ON SWITCH
Q939 CAMERA ON/OFF SWITCH
Q939 2SA1342
Q937 CAMERA ON/OFF SWITCH
Q937 2SA1342
R986 22k
C939 1 50V
R938 4700
R940 1k
C985 6800p B
R939 120k
C991 0.047
R941 4700
R942 39k
R943 220
R935 4700
R936 8200
R937 10k
C936 1 50V
C937 1 50V
R978 47k
Q936 2SA1342
Q935 2SC3396
D936 1SS123
D937 1SS123
Q938 2SC3396
Q935, 936, 938 PROTECTION DETECT
C938 0.047 B
D935 RD12M-T1B2
IC935 TL1451A
C976 220p CH
R975 3900
FREQUENCY RV938 4700
R953 120k
C961 2200p B
R956 10k
R954 4700
R955 4700
C962 0.022 F
IC935
TL1451ACNS SWITCHING REGULATOR CONTROL
CT
RT
VCC
GND
L953 1μH
L957 1μH
L946 10μH
L937 10μH
R985 10k
R944 1.2k
Q941 2SB1203R
Q940 2SC1621
C942 220p B
R945 120
C943 1000p B
L935 22μH
R946 10k
C940 2200p F
C941 10 10V
D938 DIFS4-T8
C944 33 10V ±0S
R947 2700
RV936 1k
5V
Q942 2SB1121
R948 22k
C945 0.47 B
Q943 2SA1342
D939 1SS220
R949 1k
R950 1k
R951 4700
Q944 2SC3396
Q942 - 944 SWITCH CAMERA 5V
L938 47μH
L939 47μH
L940 47μH
L942 47μH
C955 10 10V
C957 47 10V
C958 47 10V
C959 47 10V
R990 1M
D943 1SS220
L951 220μH
T936
R960 10
D941 1SS250
C963 220p B
R957 1k
R958 270
Q945 2SA812
C964 22 16V
D940 1SS220
Q947 2SK739
Q946 2SA812
Q945-947 SWITCHING
R959 1k
D942 1SS220
C965 10 50V
C966 10 50V
C967 3.3 25V ±0S
L944 22μH
C968 22 25V
R961 33k
R962 2700
15V
RV937 470
4.9
0
6.5
3
6.6
2.5
5.1
1.3
0.9
1.9
2.4
1.2
0.7
0.5
3.2
5.8
5.4
6
-0.4


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
W901
1 VIDEO 5V
2 REG 5V
3 N.C
4 REG GND
5 REG GND
6 VTR DD ON
7 MT UNREG
8 CAM DD ON
9 MT GND
10 MT GND
TO
CV-9 BOARD
W901
(See Page 115)
W902
1 32V
2 15V
3 N.C
4 CAM 5V
5 CAM UNREG
6 N.C
7 CAM GND
8 CAM GND
9 N.C
10 AUDIO 5V
TO
CV-9 BOARD
W902
(See Page 115)
Q940,941
SWITCHING
Q939
CAMERA ON/OFF
SWITCH
Q937
CAMERA
ON/OFF
SWITCH
Q942-944
SWITCH
CAMERA 5V
Q945-947
SWITCHING
IC935
TL1451ACNS
SWITCHING REGULATOR
CONTROL
FREQUENCY
RV938
4700
Q936,938
ON DETECT
Q941 2SB1203R
Q940 2SC1621
Q942 2SB1121
Q943 2SA1342
Q944 2SC3396
Q939 2SA1342
Q937 2SA1342
Q936 2SA1342
Q938 2SC3396
Q945 2SA812
Q946 2SA812
Q947 2SK739
D938 DIFS4-TB
D939 1SS220
D940 1SS220
D941 1SS250
D942 1SS220
D943 1SS220
T936
L935 22µH
L937 10µH
L938 47µH
L939 47µH
L940 47µH
L942 47µH
L944 22µH
L951 220µH
L953 1µH
L957 1µH
L946 10µH
R990 1M
RV936 1k
RV937 470
5V
15V

DT-73 board is replaced as a block, so that the PRINTED WIRING BOARD of it is onitted.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16
A
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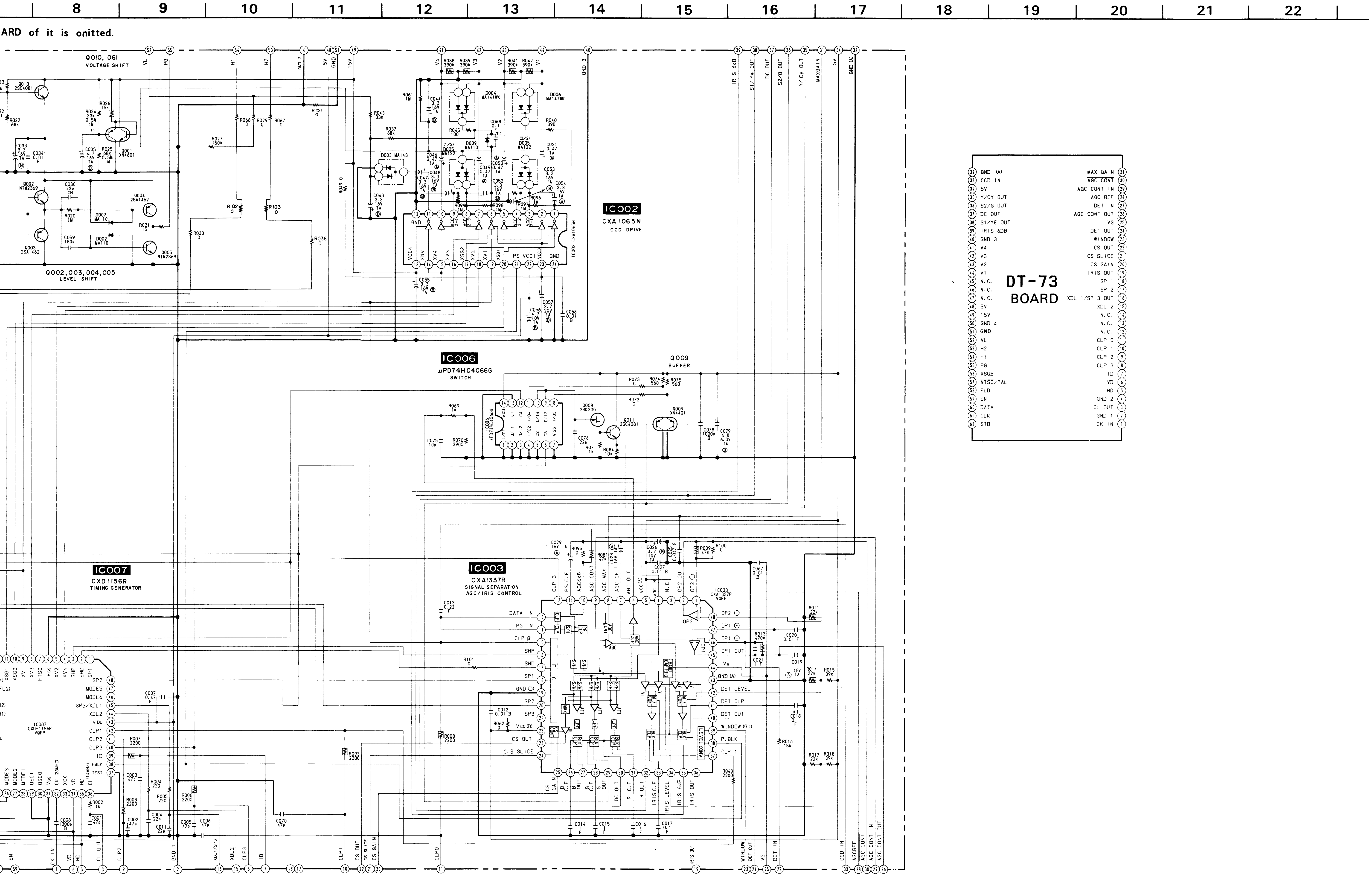
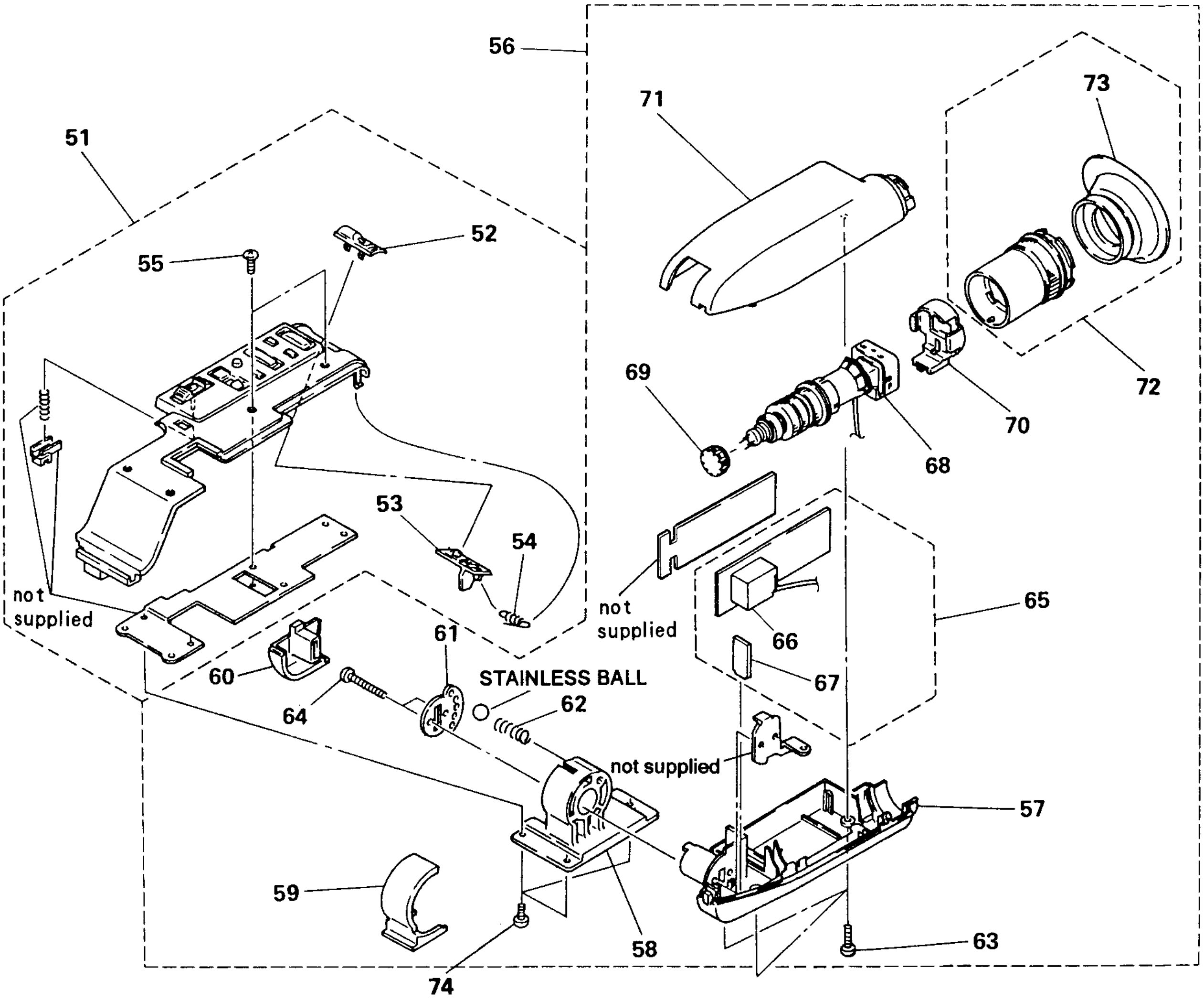
C
D
E
F
G
H
I
J
DT-73 BOARD
Q010, 061
VOLTAGE SHIFT
Q002, 003, 004, 005
LEVEL SHIFT
IC002
CXA1065N
CCD DRIVE
IC006
μPD74HC4066G
SWITCH
Q009
BUFFER
IC007
CXD1156R
TIMING GENERATOR
IC003
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
IC004
CXD1251
Q007
5V SWITCH
IC005
MB7114L
ROM
XSUB
GND 4
VL
PG
H1
H2
GND 2
5V
GND
15V
V4
V3
V2
V1
GND 3
IRIS 6dB
S1/Y OUT
DC OUT
S2/B OUT
Y/Cy OUT
MAXGAIN
5V
FLD
NT/PAL
DATA
CLK
STB
EN
CK IN
VD
HD
CL OUT
CLP2
GND 1
XDL1/SP3
XDL2
CLP3
ID
CLP1
CS OUT
CS SLICE
CS GAIN
CLP0
IRIS OUT
WINDOW
DET OUT
VG
DET IN

ARD of it is onitted.


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Q010, 061
VOLTAGE SHIFT
Q002, 003, 004, 005
LEVEL SHIFT
IC002
CXA1065N
CCD DRIVE
IC006
μPD74HC4066G
SWITCH
Q009
BUFFER
IC007
CXD1156R
TIMING GENERATOR
IC003
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
DT-73
BOARD
㉜ GND (A)
㉝ CCD IN
㉞ 5V
㉟ Y/CY OUT
㊱ S2/G OUT
㊲ DC OUT
㊳ S1/YE OUT
㊴ IRIS 6DB
㊵ GND 3
㊶ V4
㊷ V3
㊸ V2
㊹ V1
㊺ N.C.
㊻ N.C.
㊼ N.C.
㊽ 5V
㊾ 15V
㊿ GND 4
(51) GND
(52) VL
(53) H2
(54) H1
(55) PG
(56) XSUB
(57) NTSC/PAL
(58) FLD
(59) EN
(60) DATA
(61) CLK
(62) STB
MAX GAIN ㉛
AGC CONT ㉚
AGC CONT IN ㉙
AGC REF ㉘
DET IN ㉗
AGC CONT OUT ㉖
VG ㉕
DET OUT ㉔
WINDOW ㉓
CS OUT ㉒
CS SLICE ㉑
CS GAIN ⑳
IRIS OUT ⑲
SP 1 ⑱
SP 2 ⑰
XDL 1/SP 3 OUT ⑯
XDL 2 ⑮
N.C. ⑭
N.C. ⑬
N.C. ⑫
CLP 0 ⑪
CLP 1 ⑩
CLP 2 ⑨
CLP 3 ⑧
ID ⑦
VD ⑥
HD ⑤
GND 2 ④
CL OUT ③
GND 1 ②
CK IN ①

CAMERA CAMERA

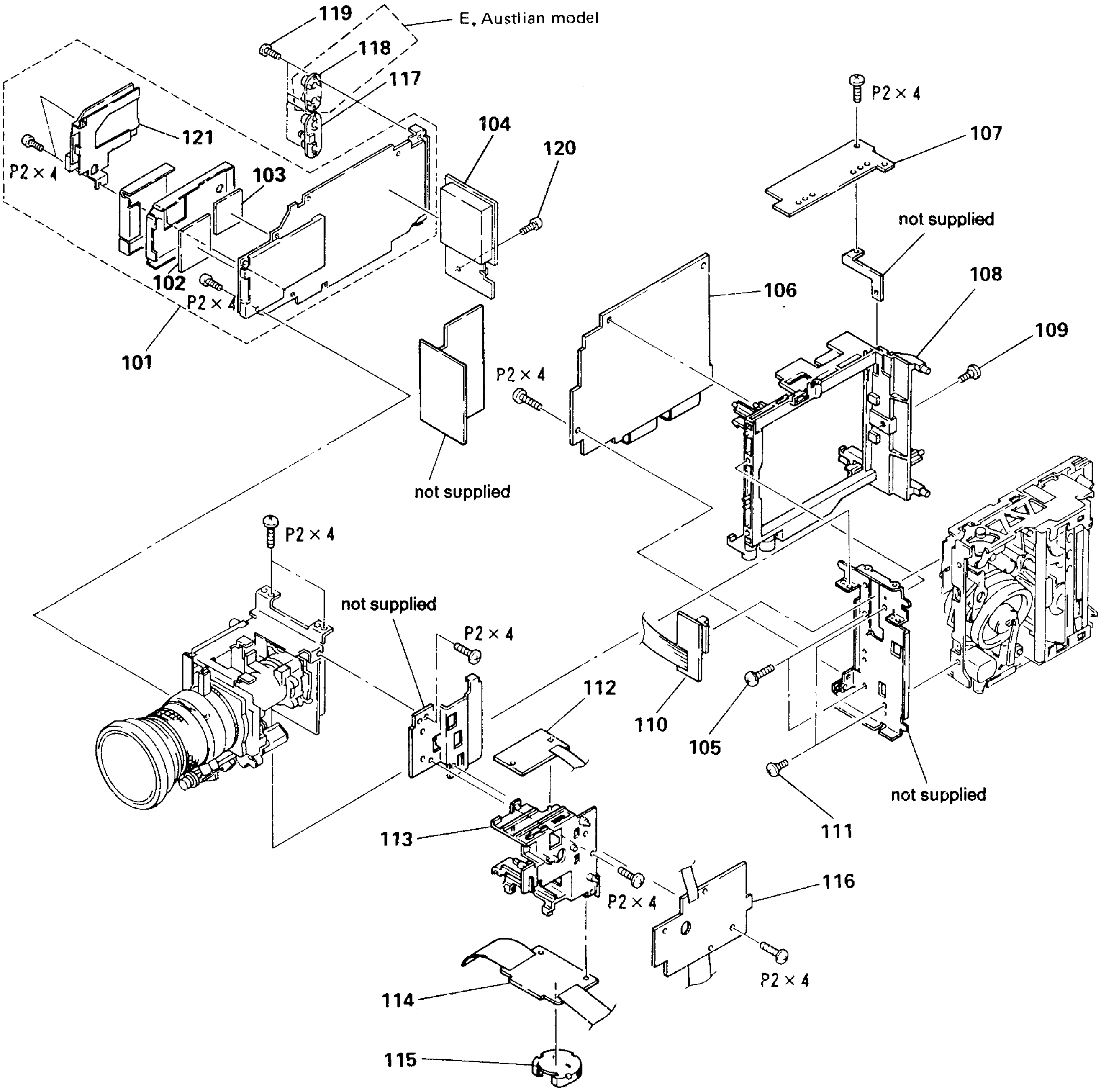
5-2. CABINET (UPPER), EVF ASSEMBLY


56
71
73
51
52
55
69
72
70
68
53
54
not supplied
not supplied
65
61
66
60
STAINLESS BALL
67
64
62
not supplied
57
59
63
58
74

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

No.	Part No.	Description	Remark
51	X-3732-961-1	CABINET (UPPER) ASSY(AEP/UK MODEL)	52-55
	X-3732-963-1	CABINET (UPPER) ASSY (E/Australian MODEL)	52-55
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	*A-7019-146-A	EVF COMPLETE ASSY	57-73
57	X-3732-911-1	CABINET (LOWER) ASSY, EVF	
58	*3-732-944-01	BEARING, EVF	
59	3-732-950-01	BLIND, EVF	
60	3-732-949-01	BLIND, EVF CABINET (LOWER)	
61	3-732-947-01	PLATE, LOCK	
62	3-732-946-01	SPRING, COMPRESSION	
63	3-713-790-31	SCREW (M2X8), TAPPING, P3	
64	3-732-987-01	SCREW (M2X20), +P	
65	*A-7061-609-A	VF-14P BOARD, COMPLETE	66, 67
66	⚠.1-439-431-11	TRANSFORMER ASSY, FLYBACK (T901)	
67	*1-629-384-21	LD-13 BOARD	
68	⚠.1-452-482-11	CRT ASSY (M01JYZ60WB)	
69	1-540-019-21	SOCKET ASSY, CRT (W901)	
70	X-3732-910-1	HOLDER ASSY, CRT	
71	3-732-948-01	CABINET (UPPER), EVF	
72	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	73
73	3-733-922-01	EYE CUP	
74	3-732-988-01	SCREW (M2X2.5)	

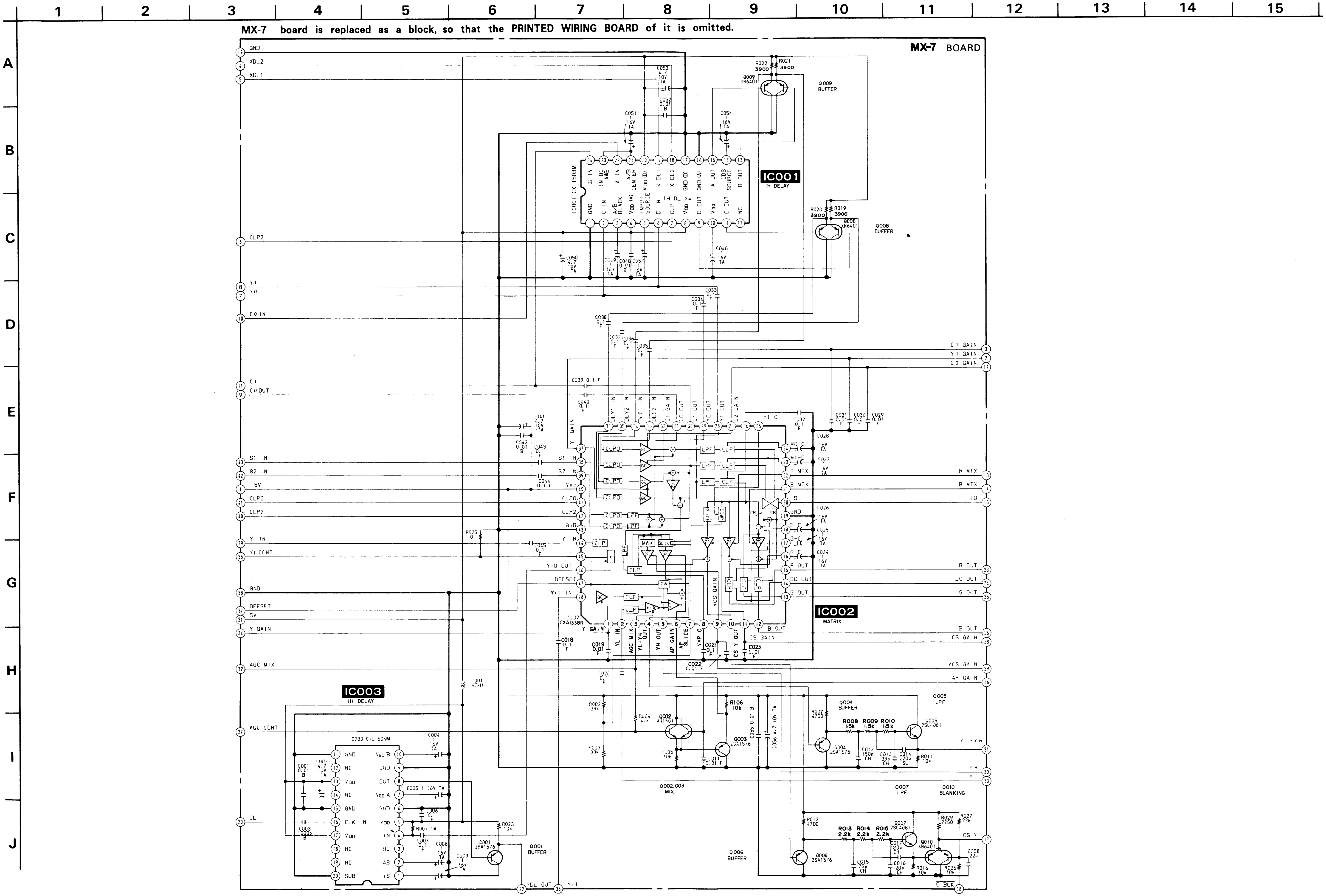
5-3. MAIN BOARD ASSEMBLY


119
E, Austlian model
118
117
P2 × 4
107
104
120
121
P2 × 4
103
not supplied
108
106
102
P2 × 4
109
101
P2 × 4
not supplied
P2 × 4
not supplied
P2 × 4
112
110
105
not supplied
111
113
116
P2 × 4
P2 × 4
114
115

No.	Part No.	Description	Remark
101	*A-7061-603-A	CV-9 BOARD, COMPLETE (AEP/UK MODEL)	102, 103, 121
	*A-7061-687-A	CV-9 BOARD, COMPLETE (E/Australian MODEL)	102, 103, 121
102	A-7068-150-A	DT-73 BOARD, COMPLETE (HIC)	
103	A-7068-128-A	MX-7 BOARD, COMPLETE (HIC)	
104	*A-7061-605-A	PS-180P BOARD, COMPLETE	
105	3-713-790-01	SCREW (M2X5), TAPPING, P3	
106	*A-7061-599-A	CO-2P BOARD, COMPLETE (AEP/UK MODEL)	
	*A-7061-689-A	CO-2P BOARD, COMPLETE (E/Australian MODEL)	
107	*1-629-374-21	VK-1P BOARD	
108	*3-732-932-01	HOLDER, MD	
109	3-732-791-01	SCREW (M2X3)	
110	*1-629-377-21	KS-3P BOARD	
111	3-732-816-01	SCREW, STEP	
112	*1-629-379-21	DK-2P BOARD	
113	*3-732-939-01	HOLDER, CK PC BOARD	
114	*A-7061-606-A	LI-10 BOARD, COMPLETE	
115	1-550-104-32	HOLDER, BATTERY	
116	*A-7061-607-A	CK-8P BOARD, COMPLETE	
117	1-537-142-11	TERMINAL BOARD	
118	1-568-409-11	JACK, PIN 2P (E/Australian MODEL)	
119	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
120	3-713-790-01	SCREW (M2X6), TAPPING, P3	
121	*A-7051-610-A	PJ-20 BOARD, COMPLETE	

MX-7 (CAMERA SIGNAL MATRIX) SCHEMATIC DIAGRAMS

MX-7 board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.



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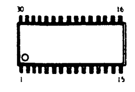
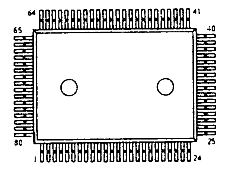
A
B
C
D
E
F
G
H
I
J
MX-7 BOARD
IC001
1H DELAY
IC001 CXL1503M
IC002
MATRIX
IC002 CXA1338R
IC003
1H DELAY
IC003 CXL1504M
Q009 BUFFER
Q008 BUFFER
Q004 BUFFER
Q005 LPF
Q002,003 MIX
Q007 LPF
Q010 BLANKING
Q006 BUFFER
Q001 BUFFER
R022 3900
R021 3900
R020 3900
R019 3900
R106 10k
R008 1.5k
R009 1.5k
R010 1.5k
R013 2.2k
R014 2.2k
R015 2.2k
R025 0
GND
XDL2
XDL1
CLP3
Y1
Y0
C0 IN
C1
C0 OUT
S1 IN
S2 IN
5V
CLP0
CLP2
Y IN
Yf CONT
OFFSET
Y GAIN
AGC MIX
AGC CONT
CL
C1 GAIN
Y1 GAIN
C2 GAIN
R MTX
B MTX
ID
R OUT
DC OUT
G OUT
B OUT
CS GAIN
VCS GAIN
AP GAIN
YL+YH
YH
YL
CS Y
C BLK
YDL OUT
Yf1

4-3. SEMICONDUCTORS

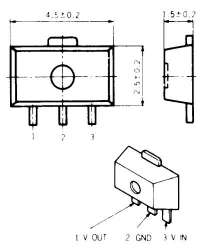
CXA1127M
CXL1501M



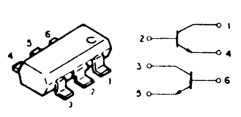
CXP80116-090Q



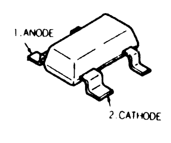
S-8054ALRS-LN


1 V OUT
2 GND
3 V IN

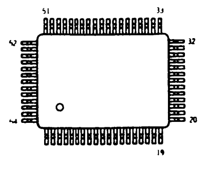
XN6501
XN4601



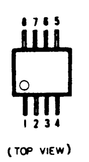
GL-1HD51


1. ANODE
2. CATHODE

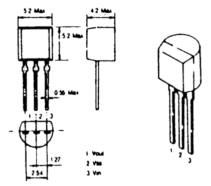
CXA1200BQ
MC14066BF



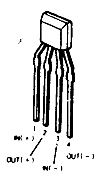
LA7293M
TK10500M


8 7 6 5
1 2 3 4
(TOP VIEW)

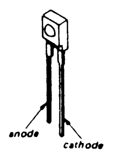
S-81350AG



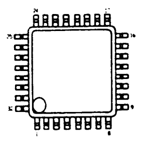
1SS196



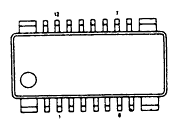
GL452S


anode
cathode

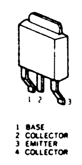
CXA1201Q



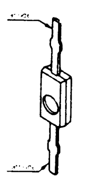
LB1631M



2SA1341
2SB1040A


1 BASE
2 COLLECTOR
3 EMITTER
4 COLLECTOR

1T32-2



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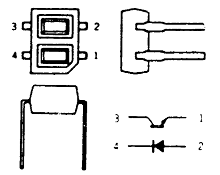

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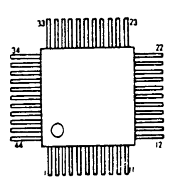

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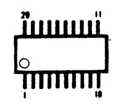

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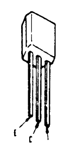
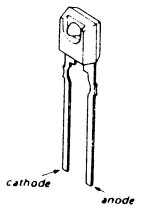


EE-TP109


cathode
anode

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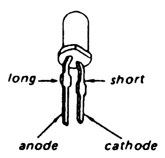
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short
anode
cathode

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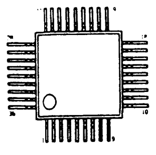

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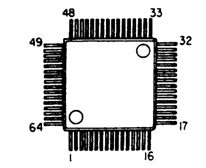
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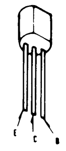
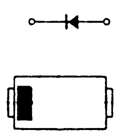
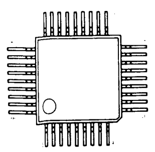
2SA733-K



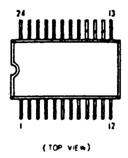
D1FS4
1T-33C



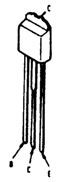
CXD1159Q



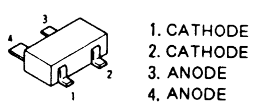
MSM6219GS-VK



2SB1385



DWA010


1. CATHODE
2. CATHODE
3. ANODE
4. ANODE

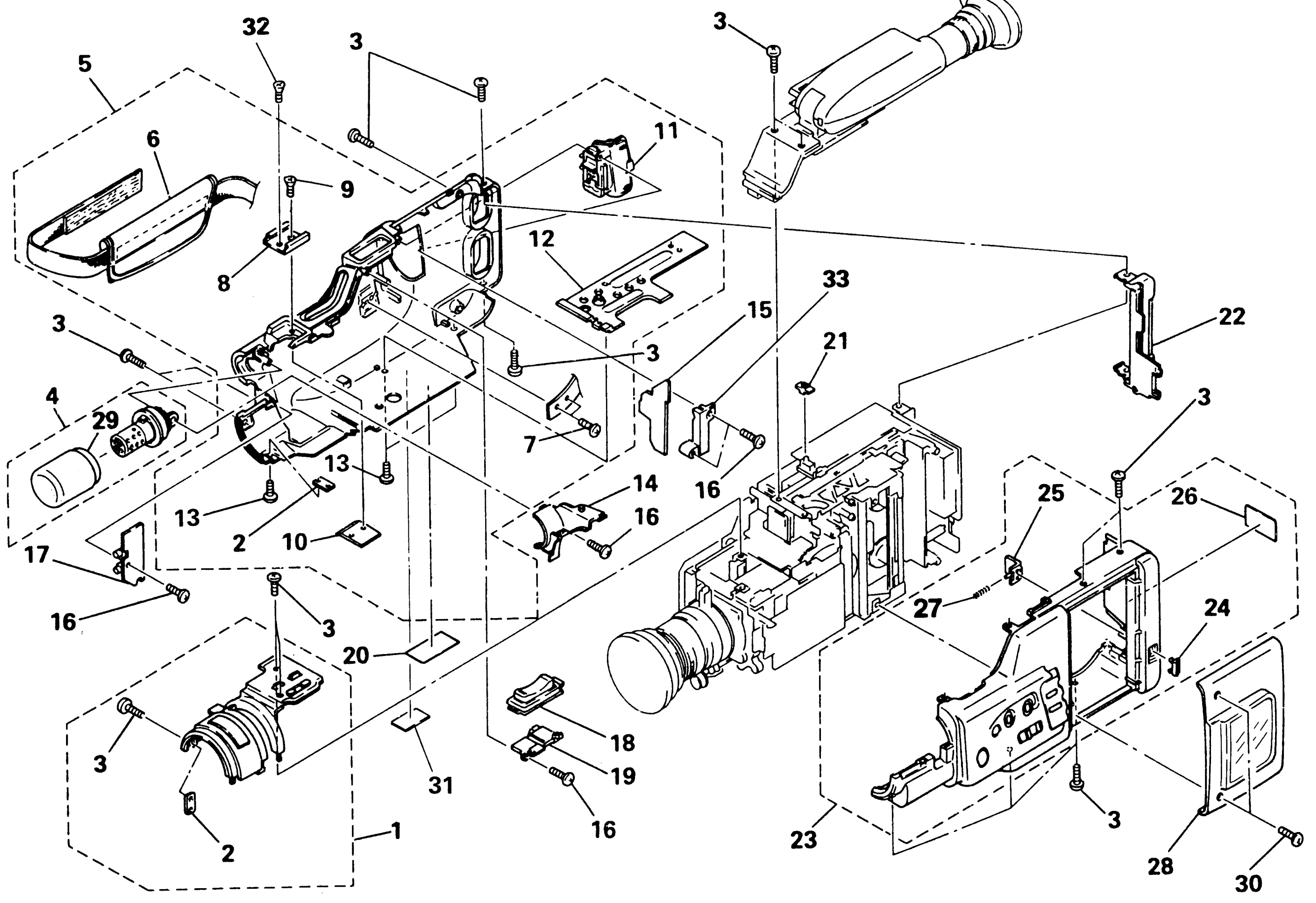
SECTION 5
EXPLODED VIEWS

NOTE:

- –XX, –X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

5-1. CABINET (R, L) ASSEMBLY


32
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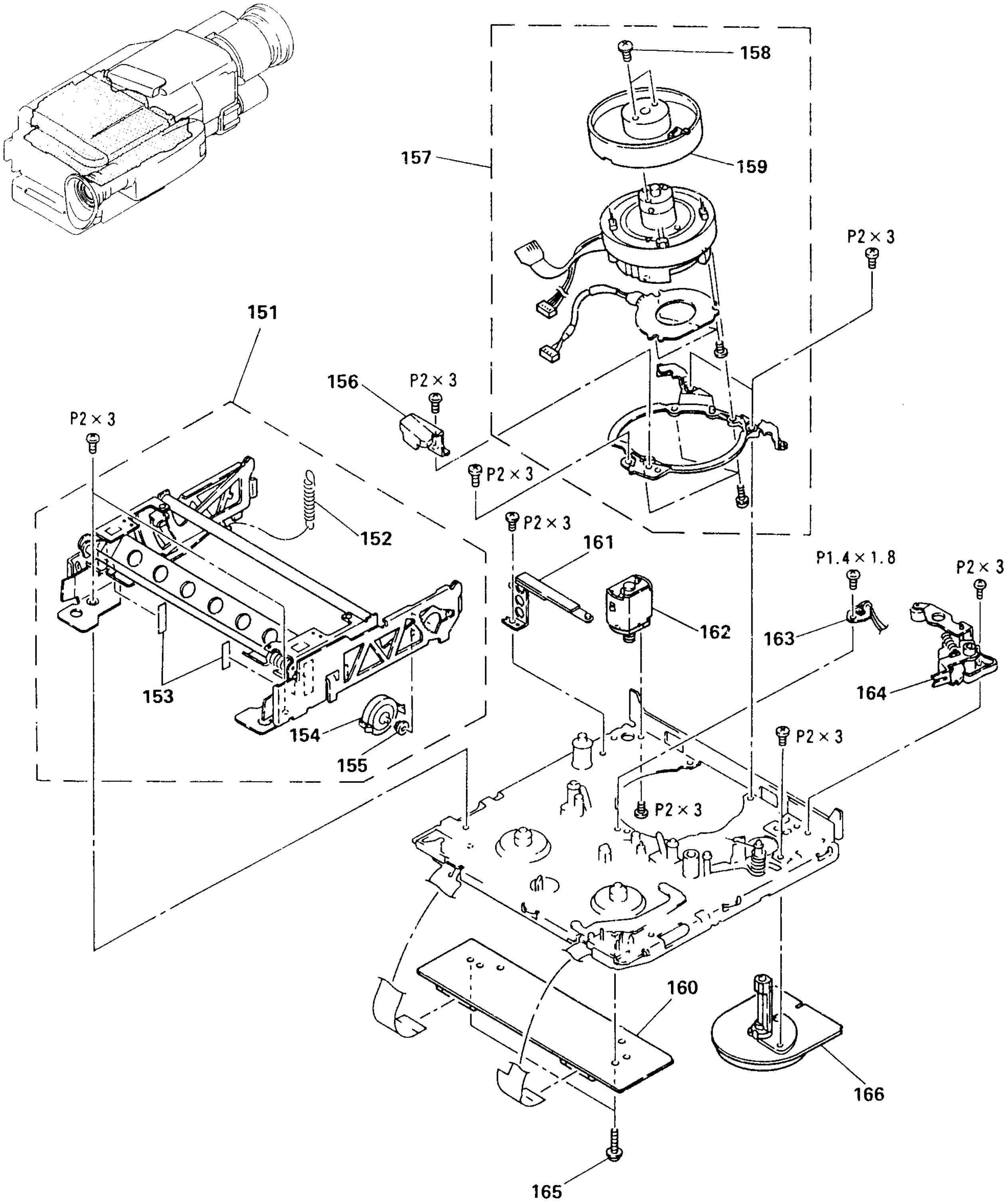
No.	Part No.	Description	Remark
1	X-3732-951-2	CABINET (FRONT) ASSY	2, 3
2	3-732-912-01	JOINT, L/R	
3	3-719-381-01	SCREW (M2X4)	
4	1-542-101-11	MICROPHONE (C-2020)	29
5	X-3732-948-1	CABINET (LEFT) BLOCK ASSY (E/Australian MODEL)	2, 6-13
5	X-3732-962-1	CABINET (LEFT) BLOCK ASSY (AEP/UK MODEL)	2, 6-13
6	3-719-323-01	BELT, GRIP	
7	3-669-480-21	+ PTPWH 2	
8	3-724-511-01	SHOE, ACCESSORY	
9	3-719-831-21	SCREW (M2X4)	
10	3-732-914-01	RETAINER, SHOE	
11	X-3732-953-1	KNOB ASSY, SP	
12	*3-732-911-01	SHEET METAL, TRIPOD	
13	3-719-381-31	SCREW (M2X3)	
14	*3-732-925-01	HOUSING, MICROPHONE	
15	*A-7070-868-A	RC-26P BOARD, COMPLETE	
16	3-713-790-31	SCREW (M2X8), TAPPING, P3	
17	*A-7061-628-A	MA-31P BOARD, COMPLETE	
18	1-571-837-11	SWITCH, PUSH (ZOOM) (S901)	
19	*3-732-937-01	RETAINER, ZOOM BUTTON	
20	*3-733-953-01	LABEL, MODEL NUMBER (AE) (AEP MODEL)	
	*3-733-988-01	LABEL, MODEL NUMBER (UK) (UK/E/Australian MODEL)	
21	3-732-926-01	BUTTON, EDIT	
22	3-732-924-01	BLIND, L/R	
23	X-3732-959-1	CABINET (RIGHT) ASSY	24-27
24	3-732-905-01	BUTTON, BATTERY RELEASE	
25	3-732-906-01	LOCK, BATTERY	
26	*3-719-683-01	LABEL, BATTERY FITTING	
27	3-426-508-00	SPRING, COMPRESSION	
28	X-3732-960-1	LID (B) ASSY, CASSETTE	
29	X-2536-712-1	WIND SCREEN ASSY	
30	3-733-912-01	SCREW (M2X2.5), SPECIAL HEAD	
31	*3-704-235-01	LABEL, CAUTION (UK MODEL)	
32	3-713-787-01	SCREW (M2X4)	
33	*3-732-928-01	STOPPER, RC	

5-4. MD BLOCK ASSEMBLY (1)



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P2 × 3
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P2 × 3
P2 × 3
P2 × 3
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P2 × 3
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P1.4 × 1.8
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P2 × 3
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P2 × 3
P2 × 3
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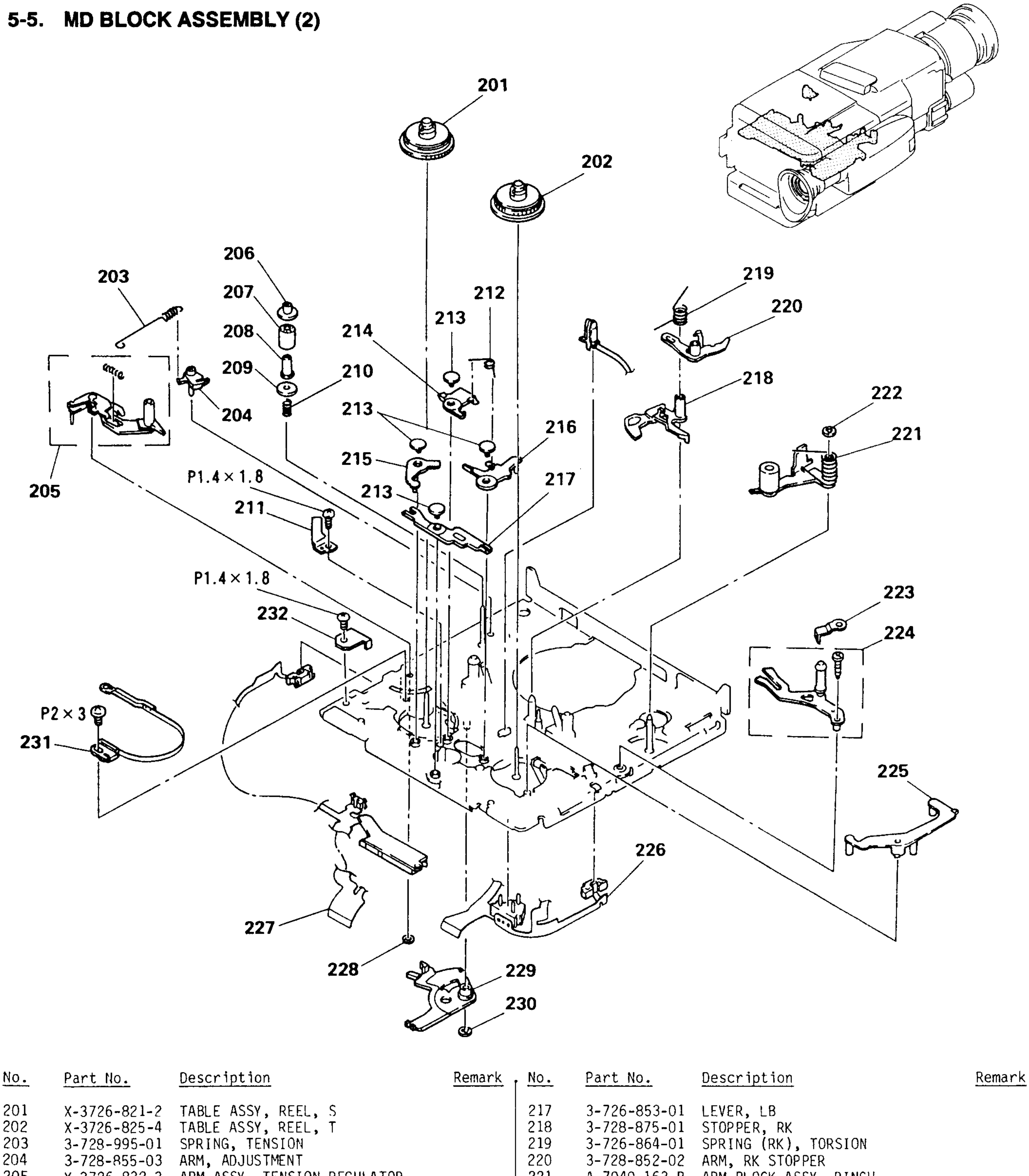
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	X-3726-854-3	CASSETTE COMPARTMENT ASSY (N)	152-155	159	A-7049-215-A	DRUM ASSY, UPPER, ROTARY (DGR-42R)	
152	3-728-825-03	SPRING, TENSION		160	*A-7061-601-A	CC-15P BOARD, COMPLETE	
153	*3-728-829-01	TAPE		161	1-535-739-12	TERMINAL, SHAFT EARTH	
154	3-728-867-02	DAMPER, OIL		162	A-7040-160-A	MOTOR ASSY, THREADING (M903)	
155	3-728-828-02	GEAR, DAMPER		163	1-808-505-12	SENSOR (DEW)	
156	3-728-868-01	GUARD, GUIDE		164	A-7040-161-B	ROLLER BLOCK ASSY, HC	
157	A-7048-235-A	DRUM ASSY (DGU-42A-R)	158, 159	165	3-713-790-01	SCREW (M2X6), TAPPING, P3	
158	3-686-493-01	SCREW (M2X5), P1		166	8-835-331-01	MOTOR, DC U-22A (CAPSTAN) (M902)	

5-5. MD BLOCK ASSEMBLY (2)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205
P1.4 × 1.8
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211
P1.4 × 1.8
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224
P2 × 3
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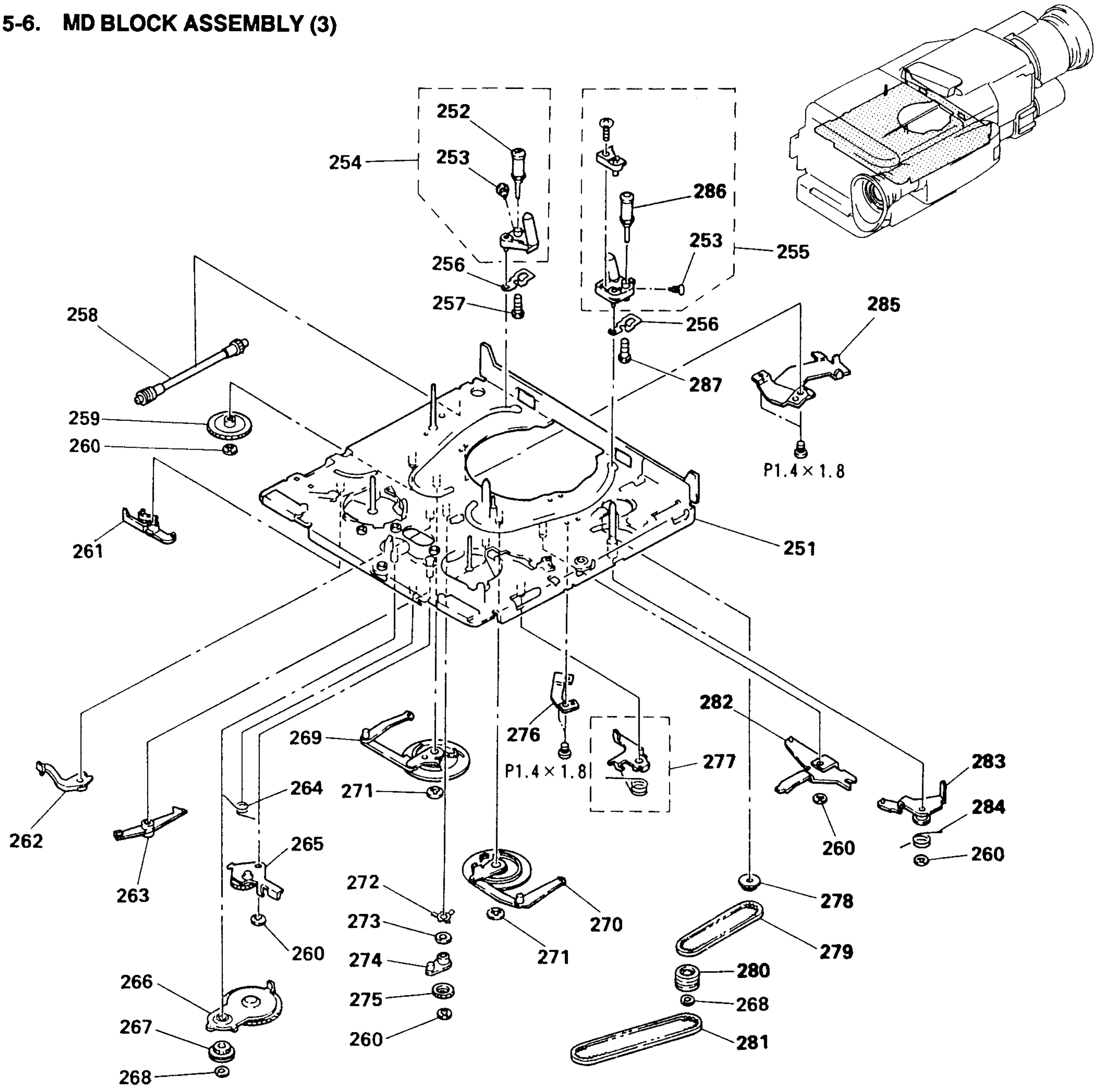
No.	Part No.	Description	Remark
201	X-3726-821-2	TABLE ASSY, REEL, S	
202	X-3726-825-4	TABLE ASSY, REEL, T	
203	3-728-995-01	SPRING, TENSION	
204	3-728-855-03	ARM, ADJUSTMENT	
205	X-3726-832-3	ARM ASSY, TENSION REGULATOR	
206	3-726-884-01	FLANGE, UPPER, TG2	
207	3-726-883-01	ROLLER, TG2	
208	3-726-885-01	SLEEVE, TG2	
209	3-726-882-02	FLANGE, LOWER, TG2	
210	3-726-886-01	SPRING, COMPRESSION	
211	3-726-848-01	RETAINER, TL	
212	3-726-866-01	SPRING (ST), TORSION	
213	3-726-858-01	PIN, SHAFT RETAINER	
214	3-728-849-01	BRAKE, S	
215	3-726-852-01	BRAKE, LB	
216	3-728-850-01	BRAKE, T	
217	3-726-853-01	LEVER, LB	
218	3-728-875-01	STOPPER, RK	
219	3-726-864-01	SPRING (RK), TORSION	
220	3-728-852-02	ARM, RK STOPPER	
221	A-7040-163-B	ARM BLOCK ASSY, PINCH	
222	3-669-465-00	WASHER (1.5), STOPPER	
223	3-728-808-01	SPRING, LEAF	
224	X-3726-822-1	ARM ASSY, TG7	
225	3-728-848-01	ARM, LB RELEASE	
226	1-628-061-12	FP-90 FLEXIBLE BOARD	
227	1-628-060-12	FP-89 FLEXIBLE BOARD	
228	3-321-393-11	WASHER, STOPPER	
229	X-3726-806-2	LEVER ASSY, SW	
230	3-726-829-01	WASHER, STOPPER	
231	X-3726-809-1	BAND ASSY, TENSION REGULATOR	
232	3-730-125-01	RETAINER, SW	

5-6. MD BLOCK ASSEMBLY (3)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P1.4 × 1.8
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P1.4 × 1.8
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284
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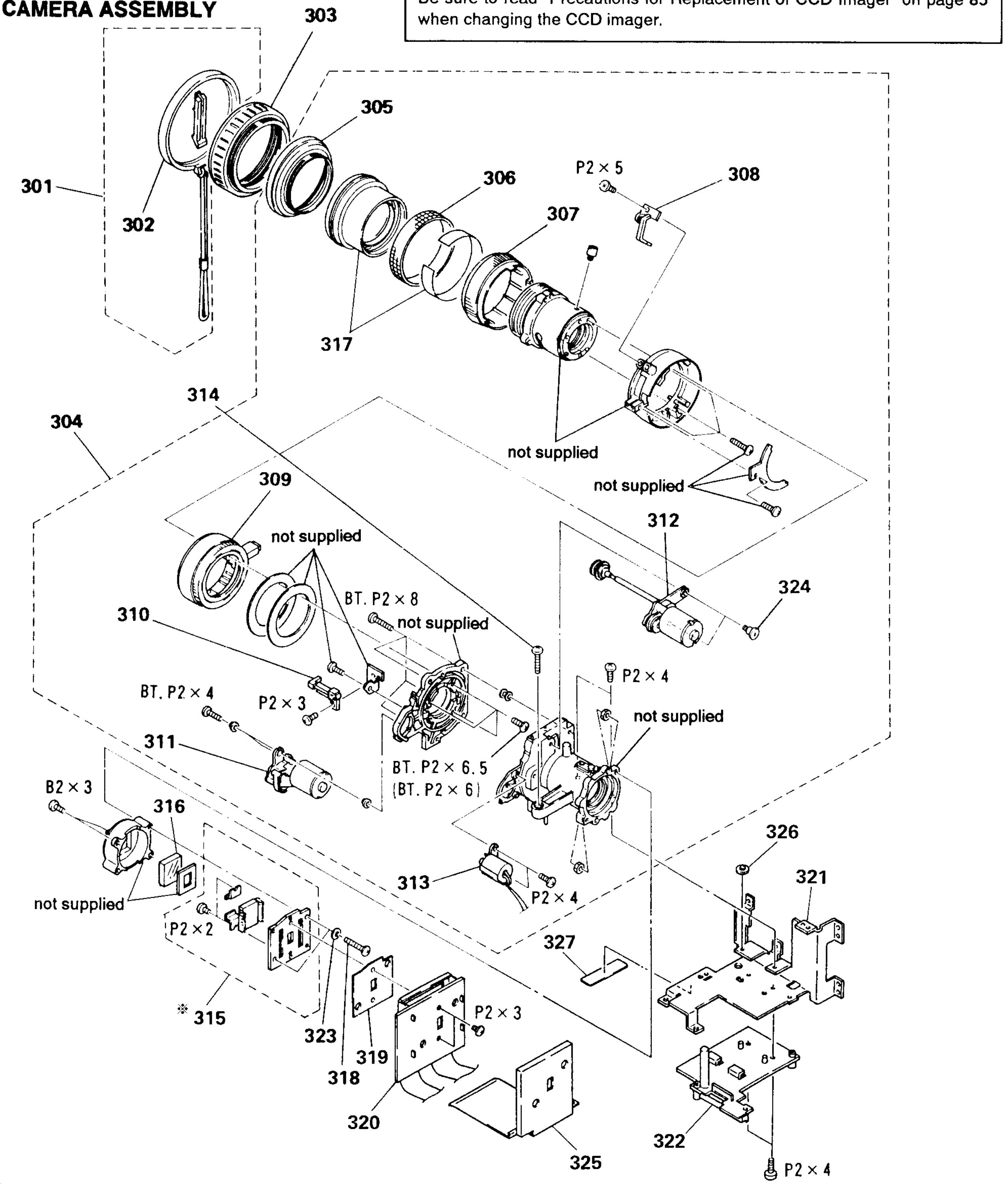
No.	Part No.	Description	Remark
251	X-3726-834-4	CHASSIS ASSY, MECHANICAL	
252	X-3726-820-1	ROLLER ASSY (U), GUIDE	
253	3-726-822-01	SCREW (M1.4X2) (STEP), HEAD	
254	A-7040-128-A	COASTER (LEFT) BLOCK ASSY	252, 253
255	A-7040-129-E	COASTER (RIGHT) BLOCK ASSY	253, 286
256	3-726-820-02	SPRING, LEAF	
257	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
258	X-3726-807-1	WORM ASSY	
259	3-726-826-01	GEAR, WHEEL	
260	3-726-829-01	WASHER, STOPPER	
261	3-728-842-01	LEVER, EJECT	
262	3-728-851-01	BRAKE, UL	
263	3-726-854-01	ARM, BRAKE RELEASE	
264	3-726-865-01	SPRING (LB), TORSION	
265	A-7040-130-A	GEAR BLOCK ASSY, LB	
266	X-3726-802-2	GEAR ASSY, RK	
267	X-3726-812-1	GEAR ASSY, RC	
268	3-321-393-11	WASHER, STOPPER	
269	X-3726-830-2	GEAR (LEFT) ASSY, DRIVE	
270	X-3726-831-2	GEAR (RIGHT) ASSY, DRIVE	
271	3-669-465-00	WASHER (1.5), STOPPER	
272	3-726-867-01	SPRING, LEAF	
273	3-701-436-21	WASHER, POLYEHTHYLENE	
274	3-726-857-02	ARM, UL	
275	3-726-856-02	GEAR, UL	
276	*3-726-805-01	REINFORCEMENT (TT)	
277	X-3726-808-2	BRAKE ASSY, TS	
278	X-3726-805-1	GEAR ASSY, JOINT	
279	3-728-866-11	BELT (S), TIMING	
280	X-3726-838-1	PULLEY (UPPER) ASSY, MIDWAY	
281	3-728-865-11	BELT (L), TIMING	
282	X-3726-804-1	LEVER ASSY, THREADING	
283	X-3726-824-1	ARM ASSY, PINCH SUB	
284	3-726-895-01	SPRING	
285	X-3726-841-1	REINFORCEMENT (SS) ASSY	
286	X-3726-864-1	ROLLER ASSY (U)-BS, GUIDE	
287	3-730-140-01	SCREW (M1.2X4)	

5-7. CAMERA ASSEMBLY

Be sure to read "Precautions for Replacement of CCD Imager" on page 85 when changing the CCD imager.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302
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312
not supplied
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BT. P2 × 8
310
not supplied
P2 × 4
BT. P2 × 4
P2 × 3
not supplied
311
BT. P2 × 6.5
(BT. P2 × 6)
B2 × 3
316
326
321
313
P2 × 4
not supplied
P2 × 2
327
※ 315
P2 × 3
323
319
318
320
325
322
P2 × 4

No.	Part No.	Description	Remark
301	A-7090-806-A	CAP ASSY, HOOD	302
302	3-724-588-01	CAP, HOOD	
303	3-728-269-01	HOOD	
304	1-547-332-11	LENS, ZOOM (VCL-906XD)	305-313, 317, 324
305	3-707-568-01	ADAPTOR, LENS HOOD	
306	3-707-559-01	RUBBER, FOCUS	
307	3-707-564-01	RING, F SCALE	
308	3-707-567-01	BEARING, F	
309	3-707-558-01	RING ASSY, ZOOM	
310	3-707-566-01	SW ASSY, (F) LIMIT (FOCUS) (S902)	
311	3-707-562-01	MOTOR ASSY, PZ GEAR (ZOOM) (M905)	
312	3-707-561-01	MOTOR ASSY, AF GEAR (FOCUS) (M904)	
313	3-707-560-01	METER ASSY, EE (IRIS) (M906)	
314	3-713-790-31	SCREW (M2X8), TAPPING, P3	
315	A-7090-941-A	CCD ASSY	
316	A-7090-879-A	FILTER BLOCK, OPTICAL (OFB-02-01)	
317	A-7030-104-A	FOCUS SERVICE KIT	
318	3-732-981-01	SCREW (M2X18)	
319	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
320	*A-7061-597-A	CD-10P BOARD, COMPLETE	
321	*3-732-935-01	PLATE, FRAME, LENS	
322	*3-732-934-01	HOLDER, LENS	
323	3-303-961-11	WASHER, POLY	
324	3-707-499-01	FITTING SCREW, F MOTOR	
325	*X-3732-914-1	SHIELD (CD) ASSY, CAMERA	
326	*3-733-933-01	SPACER	
327	*3-732-996-01	INSULATOR, MA	

SECTION 6
ELECTRICAL PARTS LIST

FP-89 **CD-10P**

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- –XX, –X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, U : μ, for example:
  UA...: μA..., UPA...: μPA...,
  UPB...: μPB..., UPC...: μPC...,
  UPD...: μPD...
- CAPACITORS
  MF : μF, PF : μμF
- COILS
  MMH : mH, UH : μH

Ref.No	Part No.	Description	Remark
	1-628-060-12	FP-89 FLEXIBLE BOARD (Ref.No.6,000 Series) *********************	
	1-571-664-11	SWITCH, SLIDE (ENCODER)	
	3-728-869-02	HOLDER, SENSOR	
		DIODE	
D301	8-719-801-55	PHOTO COUPLER TLP907-0	
		TRANSISTOR	
Q301	8-729-906-48	TRANSISTOR EE-TP109	
************	************	************************************	********
	1-628-061-12	FP-90 FLEXIBLE BOARD (Ref.No.7,000 Series) *********************	
	3-728-837-01	HOLDER, LED	
	3-728-869-02	HOLDER, SENSOR	
		DIODE	
D302	8-719-940-81	DIODE GL452S	
D303	8-719-801-55	PHOTO COUPLER TLP907-0	
		TRANSISTOR	
Q302	8-729-906-48	TRANSISTOR EE-TP109	
		SWITCH	
S302	1-571-680-11	SWITCH, PUSH (3 KEY) (REC PROOF/TAPE SELECT)	
************	************	************************************	********
	*A-7061-597-A	CD-10P BOARD, COMPLETE (Ref.No.1,000 Series) ***********************	
		CAPACITOR	
C601	1-126-193-11	ELECT 1MF 20% 50V	
C602	1-126-208-11	ELECT 47MF 20% 4V	
C603	1-126-196-11	ELECT 3.3MF 20% 50V	
C604	1-126-196-11	ELECT 3.3MF 20% 50V	
C606	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C607	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C608	1-164-005-11	CERAMIC CHIP 0.47MF 25V	
C610	1-135-145-11	TANTAL. CHIP 0.47MF 20% 25V	
C611	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C612	1-163-014-00	CERAMIC CHIP 0.0027MF 10% 50V	
C613	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C614	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C615	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C617	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C618	1-163-036-00	CERAMIC CHIP 0.068MF 50V	
C619	1-126-405-11	ELECT 10MF 20% 50V	
C620	1-163-036-00	CERAMIC CHIP 0.068MF 50V	
C621	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
		CONNECTOR	
CN601	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN602	*1-566-196-11	PIN, CONNECTOR (PC BOARD) 3P	
CN603	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN604	*1-566-197-11	PIN, CONNECTOR (PC BOARD) 4P	
CN605	1-568-164-11	CONNECTOR, FPC (1.0MM) (ZIF) 8P	
		DIODE	
D601	8-719-100-05	DIODE 1S2837	
D602	8-719-100-03	DIODE 1S2835	
D603	8-719-100-05	DIODE 1S2837	
D604	8-719-100-05	DIODE 1S2837	
		COIL	
L601	1-410-393-11	INDUCTOR CHIP 100UH	
		TRANSISTOR	
Q601	8-729-105-53	TRANSISTOR 2SK300	
Q602	8-729-100-66	TRANSISTOR 2SC1623	
Q603	8-729-100-66	TRANSISTOR 2SC1623	
Q604	8-729-100-66	TRANSISTOR 2SC1623	
Q605	8-729-100-66	TRANSISTOR 2SC1623	
Q606	8-729-216-22	TRANSISTOR 2SA1162	
Q607	8-729-104-26	TRANSISTOR 2SB804	
Q608	8-729-103-72	TRANSISTOR 2SD1005	
Q609	8-729-216-22	TRANSISTOR 2SA1162	
Q610	8-729-100-62	TRANSISTOR 2SC1623	
		RESISTOR	
R601	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R602	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R603	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R604	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R605	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R606	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R607	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R608	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R609	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R610	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R611	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R612	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R613	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R614	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R615	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R616	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R617	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R618	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R619	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R620	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R621	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R622	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

CONNECTOR

Ref.No	Part No.	Description	Remark
W601	1-574-462-11	CABLE, FLAT (1.0MM PITCH) 15P	
W603	1-574-455-11	CABLE, FLAT (1.0MM PITCH) 14P	

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*A-7061-599-A CO-2P BOARD, COMPLETE (Ref.No.6,000
********************** Series)
(AEP, UK MODEL)

*A-7061-689-A CO-2P BOARD, COMPLETE (Ref.No.6,000
********************** Series)
(AUSTRALIAN, E MODEL)

CAPACITOR

Ref.No	Part No.	Description			Remark
C101	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C102	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C103	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C104	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C105	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C106	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C107	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C108	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C109	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C110	1-124-778-00	ELECT	22MF	20%	6.3V
C111	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C112	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C113	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C114	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C115	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C116	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C117	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C118	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C119	1-124-778-00	ELECT	22MF	20%	6.3V
C123	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C124	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C125	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C126	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C131	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C132	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C133	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C134	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C135	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C136	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C138	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C139	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C140	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C141	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C142	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C145	1-124-778-00	ELECT	22MF	20%	6.3V
C148	1-163-137-00	CERAMIC CHIP	680PF	10%	50V
C149	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C160	1-124-778-00	ELECT	22MF	20%	6.3V
C161	1-126-204-11	ELECT	47MF	20%	16V
C162	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C163	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C165	1-124-778-00	ELECT	22MF	20%	6.3V
C166	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C401	1-126-195-11	ELECT	2.2MF	20%	50V
C403	1-126-206-11	ELECT	100MF	20%	6.3V
C404	1-126-206-11	ELECT	100MF	20%	6.3V
C405	1-126-198-11	ELECT	4.7MF	20%	35V
C406	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C407	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C408	1-126-193-11	ELECT	1MF	20%	50V
C409	1-126-206-11	ELECT	100MF	20%	6.3V
C410	1-126-207-11	ELECT	33MF	20%	4V
C411	1-126-207-11	ELECT	33MF	20%	4V
C412	1-126-193-11	ELECT	1MF	20%	50V (Australian, E)
C413	1-126-193-11	ELECT	1MF	20%	50V
C414	1-126-205-11	ELECT	47MF	20%	6.3V
C415	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C416	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C417	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C418	1-126-206-11	ELECT	100MF	20%	6.3V
C420	1-126-193-11	ELECT	1MF	20%	50V
C421	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C501	1-124-779-00	ELECT	10MF	20%	16V
C503	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C504	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C505	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C506	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C507	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C508	1-124-779-00	ELECT	10MF	20%	16V
C509	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C510	1-124-779-00	ELECT	10MF	20%	16V
C511	1-124-779-00	ELECT	10MF	20%	16V
C512	1-126-204-11	ELECT	47MF	20%	16V
C513	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C514	1-136-718-11	ELECT	0.1MF	5%	25V
C515	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C516	1-124-779-00	ELECT	10MF	20%	16V
C517	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C518	1-126-195-11	ELECT	2.2MF	20%	50V
C519	1-124-779-00	ELECT	10MF	20%	16V
C520	1-124-779-00	ELECT	10MF	20%	16V
C521	1-126-193-11	ELECT	1MF	20%	50V
C522	1-126-193-11	ELECT	1MF	20%	50V
C523	1-124-779-00	ELECT	10MF	20%	16V
C524	1-126-193-11	ELECT	1MF	20%	50V
C525	1-124-779-00	ELECT	10MF	20%	16V
C526	1-126-204-11	ELECT	47MF	20%	16V
C527	1-127-506-00	ELECT(SOLID)	1MF	20%	25V
C528	1-126-196-11	ELECT	3.3MF	20%	50V
C529	1-124-779-00	ELECT	10MF	20%	16V
C530	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C531	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C532	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C533	1-124-779-00	ELECT	10MF	20%	16V
C534	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C535	1-124-779-00	ELECT	10MF	20%	16V
C536	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C537	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C538	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C539	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C540	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C541	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C542	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C543	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C544	1-162-638-11	CERAMIC CHIP	1MF		16V
C545	1-162-638-11	CERAMIC CHIP	1MF		16V
C546	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C548	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C549	1-163-081-00	CERAMIC CHIP	0.22MF		25V
C550	1-164-161-11	CERAMIC CHIP	0.0022MF		50V
C551	1-163-023-00	CERAMIC CHIP	0.015MF		50V
C552	1-162-638-11	CERAMIC CHIP	1MF		16V
C553	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C554	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C555	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C556	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C557	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C558	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C559	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C560	1-162-638-11	CERAMIC CHIP	1MF		16V
C561	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C562	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C563	1-163-145-00	CERAMIC CHIP	0.0015MF	10%	50V
C564	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C565	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C566	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C567	1-164-005-11	CERAMIC CHIP	0.47MF		25V
C570	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C573	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C574	1-162-638-11	CERAMIC CHIP	1MF		16V
C576	1-162-638-11	CERAMIC CHIP	1MF		16V
C577	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C578	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C579	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C580	1-162-638-11	CERAMIC CHIP	1MF		16V
C581	1-135-092-21	TANTAL. CHIP	3.3MF	20%	16V
C582	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C590	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C591	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C617	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C621	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C622	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C623	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C624	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C625	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C626	1-127-489-00	ELECT(SOLID)	10MF	20%	10V

Ref.No	Part No.	Description			Remark
C627	1-124-638-11	ELECT	22MF	20%	10V
C628	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C629	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C630	1-127-489-00	ELECT(SOLID)	10MF	20%	10V
C631	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C632	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C633	1-135-149-21	TANTAL. CHIP	2.2MF	20%	6.3V

CONNECTOR

Ref.No	Part No.	Description
CN101	1-566-529-11	CONNECTOR, FPC (ZIF) 13P
CN102	*1-566-184-11	PIN, CONNECTOR (PC BOARD) 5P
CN501	1-566-529-11	CONNECTOR, FPC (ZIF) 13P
CN502	1-566-531-11	CONNECTOR, FPC (ZIF) 15P
CN503	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P
CN504	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P
CN505	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P
CN506	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P
CN507	1-566-528-11	CONNECTOR, FPC (ZIF) 12P

DIODE

Ref.No	Part No.	Description
D401	8-719-106-12	DIODE RD6.2M-T1B3
D504	8-719-100-05	DIODE 1S2837
D505	8-719-100-05	DIODE 1S2837
D621	8-719-938-75	DIODE SB05-05CP
D622	8-719-938-75	DIODE SB05-05CP
D623	8-719-100-03	DIODE 1S2835

FILTER

Ref.No	Part No.	Description
FL401	1-236-145-11	FILTER, BAND PASS

IC

Ref.No	Part No.	Description
IC101	8-752-033-38	IC CXA1202R
IC401	8-741-150-51	IC SBX1505-21
IC501	8-752-809-08	IC CXP80116-099Q
IC502	8-759-940-79	IC S-81350AG
IC503	8-759-974-21	IC S-8054ALRS-LN
IC504	8-759-804-72	IC LB1631M
IC505	8-759-100-94	IC UPC358G2
IC506	8-759-107-68	IC CX20115A
IC507	8-759-202-45	IC CX20114
IC508	8-759-805-06	IC CXA1127M
IC509	8-759-209-53	IC CXA1204Q
IC510	8-759-100-95	IC UPC324G2
IC621	8-759-945-17	IC MB3775PF

COIL

Ref.No	Part No.	Description	
L101	1-408-777-00	INDUCTOR CHIP	10UH
L102	1-412-033-11	INDUCTOR CHIP	220UH
L103	1-412-029-11	INDUCTOR CHIP	10UH
L104	1-412-033-11	INDUCTOR CHIP	220UH
L105	1-412-033-11	INDUCTOR CHIP	220UH
L106	1-412-033-11	INDUCTOR CHIP	220UH

When indicating parts by reference number, please include the board name.

CO-2P

Ref.No	Part No.	Description	Remark
L107	1-412-033-11	INDUCTOR CHIP 220UH	
L501	1-412-031-11	INDUCTOR CHIP 47UH	
L502	1-412-031-11	INDUCTOR CHIP 47UH	
L503	1-408-795-21	INDUCTOR CHIP 330UH	
L504	1-412-032-21	INDUCTOR CHIP 100UH	
L505	1-412-030-11	INDUCTOR CHIP 22UH	
L506	1-412-032-21	INDUCTOR CHIP 100UH	
L621	1-410-690-11	COIL, CHOKE 22UH	
L622	1-410-626-11	COIL, CHOKE 47UH	
L623	1-410-626-11	COIL, CHOKE 47UH	

IC LINK

Ref.No	Part No.	Description	Remark
PS502 ⚠	1-532-605-00	LINK, IC (ICP-N10)	
PS503 ⚠	1-532-685-00	LINK, IC (ICP-N20)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q102	8-729-100-66	TRANSISTOR 2SC1623	
Q108	8-729-901-06	TRANSISTOR DTA144EK	
Q109	8-729-100-66	TRANSISTOR 2SC1623	
Q110	8-729-100-66	TRANSISTOR 2SC1623	
Q112	8-729-173-38	TRANSISTOR 2SA733-K	
Q113	8-729-100-76	TRANSISTOR 2SA812	
Q114	8-729-901-01	TRANSISTOR DTC144EK	
Q115	8-729-901-06	TRANSISTOR DTA144EK	
Q116	8-729-901-06	TRANSISTOR DTA144EK	
Q401	8-729-100-66	TRANSISTOR 2SC1623	
Q402	8-729-100-66	TRANSISTOR 2SC1623	
Q403	8-729-901-06	TRANSISTOR DTA144EK	
Q404	8-729-901-01	TRANSISTOR DTC144EK	
Q405	8-729-901-06	TRANSISTOR DTA144EK	
Q406	8-729-100-66	TRANSISTOR 2SC1623	
Q503	8-729-805-39	TRANSISTOR 2SC3898	
Q504	8-729-805-39	TRANSISTOR 2SC3898	
Q506	8-729-100-76	TRANSISTOR 2SA812	
Q507	8-729-100-76	TRANSISTOR 2SA812	
Q515	8-729-100-76	TRANSISTOR 2SA812	
Q516	8-729-100-66	TRANSISTOR 2SC1623	
Q517	8-729-100-66	TRANSISTOR 2SC1623	
Q518	8-729-100-66	TRANSISTOR 2SC1623	
Q519	8-729-100-66	TRANSISTOR 2SC1623	
Q520	8-729-104-94	TRANSISTOR 2SB1040A-4	
Q521	8-729-100-66	TRANSISTOR 2SC1623	
Q522	8-729-100-76	TRANSISTOR 2SA812	
Q524	8-729-100-66	TRANSISTOR 2SC1623	
Q525	8-729-100-66	TRANSISTOR 2SC1623	
Q526	8-729-100-76	TRANSISTOR 2SA812	
Q527	8-729-100-66	TRANSISTOR 2SC1623	
Q528	8-729-100-76	TRANSISTOR 2SA812	
Q529	8-729-100-66	TRANSISTOR 2SC1623	
Q530	8-729-100-76	TRANSISTOR 2SA812	
Q531	8-729-100-76	TRANSISTOR 2SA812	
Q532	8-729-100-76	TRANSISTOR 2SA812	
Q533	8-729-100-76	TRANSISTOR 2SA812	
Q534	8-729-901-01	TRANSISTOR DTC144EK	
Q535	8-729-901-01	TRANSISTOR DTC144EK	
Q536	8-729-805-39	TRANSISTOR 2SC3898	
Q537	8-729-100-76	TRANSISTOR 2SA812	
Q538	8-729-100-66	TRANSISTOR 2SC1623	
Q539	8-729-100-66	TRANSISTOR 2SC1623	
Q540	8-729-100-66	TRANSISTOR 2SC1623	
Q621	8-729-805-43	TRANSISTOR 2SC3396	
Q622	8-729-162-13	TRANSISTOR 2SC1621	
Q623	8-729-805-25	TRANSISTOR 2SB1121	
Q624	8-729-901-01	TRANSISTOR DTC144EK	
Q625	8-729-805-65	TRANSISTOR 2SA1344	
Q626	8-729-162-13	TRANSISTOR 2SC1621	
Q627	8-729-805-25	TRANSISTOR 2SB1121	
Q628	8-729-100-66	TRANSISTOR 2SC1623	
Q629	8-729-100-66	TRANSISTOR 2SC1623	

RESISTOR

Ref.No	Part No.	Description				Remark
R102	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R103	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R104	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R106	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R110	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R113	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R114	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R115	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R116	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R117	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R118	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R119	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R120	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R121	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R122	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R123	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R124	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R125	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R126	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R127	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R128	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R129	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R130	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R131	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R132	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R133	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R134	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R135	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R136	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R137	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R139	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R140	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R141	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R143	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R150	1-216-089-00	METAL GLAZE	47K	5%	1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

CO-2P

Ref.No	Part No.	Description				Remark
R151	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R155	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R156	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R157	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R158	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R160	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R161	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R401	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R402	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R403	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R404	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R405	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R407	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R408	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R409	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R410	1-216-011-00	METAL GLAZE	27	5%	1/10W	
R411	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R415	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R416	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	(AEP, UK)
R416	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	(AUSTRALIAN, E)
R417	1-216-089-00	METAL GLAZE	47K	5%	1/10W	(AUSTRALIAN, E)
R418	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	(AUSTRALIAN, E)
R419	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R421	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R422	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R423	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R430	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R431	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R501	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R502	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R503	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R504	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R505	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R506	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R507	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R508	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R509	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R510	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R511	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R512	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R513	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R514	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R515	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R516	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R518	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R519	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R520	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R521	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R522	1-216-097-00	METAL GLAZE	100K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R523	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R524	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R525	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R526	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R528	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R530	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R531	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R532	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R533	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R534	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R535	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R536	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R537	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R538	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R539	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R540	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R541	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R542	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R543	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R544	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R545	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R546	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R547	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R548	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R549	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R550	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R551	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R552	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R553	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R554	1-216-182-00	METAL GLAZE	220	5%	1/8W	
R555	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R556	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R557	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R558	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R559	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R560	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R561	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R562	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R563	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R564	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R565	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R566	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R567	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R568	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R570	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R571	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R572	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R574	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R575	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R576	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R577	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R578	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R579	1-216-025-00	METAL GLAZE	100	5%	1/10W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
R580	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R581	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R582	1-216-298-00	METAL GLAZE 2.2 5% 1/10W	
R583	1-216-298-00	METAL GLAZE 2.2 5% 1/10W	
R584	1-216-298-00	METAL GLAZE 2.2 5% 1/10W	
R585	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R586	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R587	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R588	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R589	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R590	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R591	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R592	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R593	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R594	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R595	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R596	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R597	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R598	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R599	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R600	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R601	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R602	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R603	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R604	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R605	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R606	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R607	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R608	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R609	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R610	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R611	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R612	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R613	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R614	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R615	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R616	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R617	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R618	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R619	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R620	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R621	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R622	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R623	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R624	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R625	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R626	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R627	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R628	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R629	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R630	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R631	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R632	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	

Ref.No	Part No.	Description	Remark
R633	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R634	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R635	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R636	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R637	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R638	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R639	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R640	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R641	1-216-136-00	METAL GLAZE 2.7 5% 1/8W	
R642	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R643	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R644	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R645	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R652	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R653	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R654	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R655	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R656	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R657	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R658	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R659	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R660	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R661	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R663	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R664	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R665	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R666	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R667	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R668	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R669	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R670	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	

VARIABLE RESISTOR

RV101	1-230-873-11	RES, ADJ, METAL GRAZE 47K	
RV102	1-230-873-11	RES, ADJ, METAL GRAZE 47K	
RV501	1-230-874-11	RES, ADJ, METAL GLAZE 100K	
RV502	1-230-876-11	RES, ADJ, METAL GLAZE 470K	
RV551	1-238-225-11	RES, ADJ, METAL GLAZE 47K	
RV621	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	

CONNECTOR

W501	1-574-451-11	CABLE, FLAT (1.0MM PITCH) 22P	
W502	1-574-451-11	CABLE, FLAT (1.0MM PITCH) 22P	

CRYSTAL

X501	1-577-116-21	VIBRATOR, CRYSTAL (16MHz)	
X502	1-567-699-21	VIBRATOR, CRYSTAL (5.9MHz)	

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When indicating parts by reference number, please include the board name.

1-629-374-21 VK-1P BOARD (Ref.No.8,000 Series)
****

CONNECTOR

Ref.No	Part No.	Description	Remark
CN508	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No	Part No.	Description	Remark
D501	8-719-100-05	DIODE 1S2837	
D502	8-719-100-03	DIODE 1S2835	
D503	8-719-100-03	DIODE 1S2835	
D504	8-719-801-41	DIODE 1SS196	
D505	8-719-100-05	DIODE 1S2837 (AEP, UK)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q501	8-729-805-39	TRANSISTOR 2SC3898-TB	
Q502	8-729-805-39	TRANSISTOR 2SC3898-TB	

SWITCH

Ref.No	Part No.	Description	Remark
S501	1-571-101-11	SWITCH, SLIDE (POWER, VTR/OFF/CAM)	
S502	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (REW ◀◀)	
S503	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PB ▷)	
S504	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FF ▶▶)	
S505	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (STOP □)	
S506	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (PAUSE ▯▯)	
S507	1-571-102-21	SWITCH, SLIDE (REC) (Australian, E)	
S508	1-571-102-11	SWITCH, SLIDE (EJECT)	
S509	1-570-909-21	SWITCH, TACTIL(REFLOW TYPE)(DATA SCREEN)	
S510	1-553-977-00	SWITCH, SLIDE (EDIT)	

CONNECTOR

Ref.No	Part No.	Description	Remark
W507	1-574-457-11	CABLE, FLAT (1.0MM PITCH) 12P	

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*A-7061-601-A CC-15P BOARD, COMPLETE (Ref.No.7,000 Series)
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CAPACITOR

Ref.No	Part No.	Description	Remark
C001	1-162-638-11	CERAMIC CHIP 1MF	16V
C002	1-162-638-11	CERAMIC CHIP 1MF	16V
C003	1-163-038-00	CERAMIC CHIP 0.1MF	25V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN001	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN002	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	

DIODE

Ref.No	Part No.	Description	Remark
D001	8-719-100-05	DIODE 1S2837	
D002	8-719-100-05	DIODE 1S2837	
D003	8-719-100-05	DIODE 1S2837	

IC

Ref.No	Part No.	Description	Remark
IC001	8-759-100-93	IC UPC393G2	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q002	8-729-805-39	TRANSISTOR 2SC3898-TB	
Q004	8-729-805-39	TRANSISTOR 2SC3898-TB	
Q005	8-729-805-39	TRANSISTOR 2SC3898-TB	
Q006	8-729-805-41	TRANSISTOR 2SC3398	

RESISTOR

Ref.No	Part No.	Description	Remark
R001	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R002	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R003	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R004	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R005	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R006	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R007	1-216-174-00	METAL GLAZE 100 5% 1/8W	
R008	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R009	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R010	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R011	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R012	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R013	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R014	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R015	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R016	1-216-097-00	METAL GLAZE 100K 5% 1/10W	

CONNECTOR

Ref.No	Part No.	Description	Remark
W501	1-574-457-11	CABLE, FLAT (1.0MM PITCH) 13P	

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*A-7061-603-A CV-9 BOARD, COMPLETE (Ref.No.2,000 Series)
****
(AEP, UK MODEL)

*A-7061-687-A CV-9 BOARD, COMPLETE (Ref.No.2,000 Series)
****
(Australian, E MODEL)

A-7068-128-A MX-7 BOARD, COMPLETE (HIC)

A-7068-150-A DT-73 BOARD, COMPLETE (HIC)

CAPACITOR

Ref.No	Part No.	Description	Remark
C201	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C202	1-124-779-00	ELECT 10MF 20% 16V	
C203	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C204	1-124-779-00	ELECT 10MF 20% 16V	
C205	1-126-191-11	ELECT 0.47MF 20% 50V	
C206	1-124-779-00	ELECT 10MF 20% 16V	
C209	1-126-205-11	ELECT 47MF 20% 6.3V	
C210	1-126-191-11	ELECT 0.47MF 20% 50V	(Australian, E)
C211	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C212	1-126-191-11	ELECT 0.47MF 20% 50V	
C213	1-124-779-00	ELECT 10MF 20% 16V	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description		Remark
C214	1-126-246-11	ELECT 220MF	20%	4V
C215	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C216	1-124-779-00	ELECT 10MF	20%	16V
C217	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C218	1-126-191-11	ELECT 0.47MF	20%	50V
C219	1-126-193-11	ELECT 1MF	20%	50V
C220	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C221	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C223	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C224	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C225	1-162-638-11	CERAMIC CHIP 1MF		16V
C226	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C227	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C228	1-135-150-21	TANTAL. CHIP 3.3MF	20%	6.3V
C229	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C230	1-162-638-11	CERAMIC CHIP 1MF		16V
C231	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C232	1-135-150-21	TANTAL. CHIP 3.3MF	20%	6.3V
C233	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C234	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C235	1-162-638-11	CERAMIC CHIP 1MF		16V
C236	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C237	1-162-638-11	CERAMIC CHIP 1MF		16V
C238	1-135-150-21	TANTAL. CHIP 3.3MF	20%	6.3V
C239	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C240	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C241	1-162-638-11	CERAMIC CHIP 1MF		16V
C242	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C243	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C245	1-126-100-11	ELECT 10MF	20%	6.3V
C246	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C247	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C248	1-124-779-00	ELECT 10MF	20%	16V
C249	1-124-779-00	ELECT 10MF	20%	16V
C250	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C251	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C252	1-124-779-00	ELECT 10MF	20%	16V
C253	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C254	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C257	1-124-779-00	ELECT 10MF	20%	16V
C258	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C259	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C260	1-124-779-00	ELECT 10MF	20%	16V
C265	1-124-779-00	ELECT 10MF	20%	16V
C269	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C270	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C271	1-163-089-00	CERAMIC CHIP 6PF	0.25PF	50V
C273	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C274	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C275	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C276	1-124-778-00	ELECT 22MF	20%	6.3V
C277	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C278	1-163-129-00	CERAMIC CHIP 330PF	5%	50V
C279	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C280	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C281	1-124-778-00	ELECT 22MF	20%	6.3V
C287	1-126-100-11	ELECT 10MF	20%	6.3V
C288	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C289	1-124-779-00	ELECT 10MF	20%	16V
C291	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C292	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C293	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C294	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C295	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C296	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C298	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C300	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C301	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C302	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C304	1-163-127-00	CERAMIC CHIP 270PF	5%	50V
C305	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C306	1-124-778-00	ELECT 22MF	20%	6.3V
C307	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C308	1-163-107-00	CERAMIC CHIP 39PF	5%	50V
C309	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C310	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C311	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C312	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C313	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C314	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C315	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C316	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C317	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C327	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C333	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C334	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C336	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C341	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C343	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C350	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C352	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C353	1-163-127-00	CERAMIC CHIP 270PF	5%	50V (AEP, UK)
C357	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C360	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C374	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C401	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C402	1-124-779-00	ELECT 10MF	20%	16V
C403	1-163-127-00	CERAMIC CHIP 270PF	5%	50V
C404	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C407	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C409	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C411	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C413	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C414	1-124-778-00	ELECT 22MF	20%	6.3V
C415	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C416	1-163-099-00	CERAMIC CHIP 18PF	5%	50V

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Ref.No	Part No.	Description			Remark
C417	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C418	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C419	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C451	1-162-638-11	CERAMIC CHIP	1MF		16V
C452	1-162-638-11	CERAMIC CHIP	1MF		16V
C501	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C502	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C504	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C505	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C506	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C507	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C508	1-124-779-00	ELECT	10MF	20%	16V
C509	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C510	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C511	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C512	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C513	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C514	1-163-133-00	CERAMIC CHIP	470PF	10%	50V
C515	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C516	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C517	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C601	1-135-145-11	TANTAL. CHIP	0.47MF	20%	25V
C602	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C603	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C604	1-162-638-11	CERAMIC CHIP	1MF		16V
C605	1-162-638-11	CERAMIC CHIP	1MF		16V
C606	1-163-100-00	CERAMIC CHIP	20PF	5%	50V
C607	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C608	1-163-114-00	CERAMIC CHIP	75PF	5%	50V
C609	1-163-100-00	CERAMIC CHIP	20PF	5%	50V
C610	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C611	1-163-114-00	CERAMIC CHIP	75PF	5%	50V
C612	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C613	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C614	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C615	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C616	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C617	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C618	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C619	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C621	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C622	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C623	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C624	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C626	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C627	1-163-133-00	CERAMIC CHIP	470PF	10%	50V
C628	1-163-133-00	CERAMIC CHIP	470PF	10%	50V
C629	1-163-133-00	CERAMIC CHIP	470PF	10%	50V
C631	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C632	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C636	1-126-205-11	ELECT	47MF	20%	6.3V
C637	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V

Ref.No	Part No.	Description			Remark
C638	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C639	1-124-779-00	ELECT	10MF	20%	16V
C640	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C641	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C642	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C647	1-124-778-00	ELECT	22MF	20%	6.3V
C648	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C650	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C651	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C652	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C653	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C654	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C655	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C656	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C658	1-162-638-11	CERAMIC CHIP	1MF		16V
C660	1-162-638-11	CERAMIC CHIP	1MF		16V
C661	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C562	1-162-638-11	CERAMIC CHIP	1MF		16V
C665	1-162-638-11	CERAMIC CHIP	1MF		16V
C666	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C669	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C673	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C675	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C676	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C677	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C678	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C679	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C681	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C683	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C684	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C685	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C686	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C687	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C689	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C690	1-164-005-11	CERAMIC CHIP	0.47MF		25V
C691	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C692	1-135-091-00	TANTAL. CHIP	1MF	20%	16V
C693	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C694	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C695	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C696	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C697	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C699	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C700	1-162-638-11	CERAMIC CHIP	1MF		16V
C701	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C702	1-162-638-11	CERAMIC CHIP	1MF		16V
C703	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C704	1-124-566-11	ELECT	120MF	20%	6.3V
C705	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C706	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C707	1-135-145-11	TANTAL. CHIP	0.47MF	20%	25V
C708	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C709	1-163-093-00	CERAMIC CHIP	10PF	5%	50V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description		Remark
C710	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C712	1-126-205-11	ELECT 47MF	20%	6.3V
C713	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C714	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C715	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C716	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C718	1-126-196-11	ELECT 3.3MF	20%	50V
C719	1-135-072-21	TANTAL. CHIP 0.22MF	20%	35V
C721	1-124-779-00	ELECT 10MF	20%	16V
C722	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C723	1-126-196-11	ELECT 3.3MF	20%	50V
C724	1-126-196-11	ELECT 3.3MF	20%	50V
C725	1-162-638-11	CERAMIC CHIP 1MF		16V
C726	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C727	1-126-196-11	ELECT 3.3MF	20%	50V
C729	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C730	1-162-638-11	CERAMIC CHIP 1MF		16V
C731	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C735	1-126-205-11	ELECT 47MF	20%	6.3V
C736	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C741	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C798	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C799	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C801	1-124-779-00	ELECT 10MF	20%	16V
C802	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C803	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C804	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C805	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C806	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C807	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C808	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C809	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C810	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C811	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C812	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C813	1-162-638-11	CERAMIC CHIP 1MF		16V
C814	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C815	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C817	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C818	1-162-638-11	CERAMIC CHIP 1MF		16V
C819	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C820	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C821	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C822	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C824	1-162-638-11	CERAMIC CHIP 1MF		16V
C825	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C826	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C827	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C828	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C829	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C830	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C832	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C835	1-163-033-00	CERAMIC CHIP 0.022MF		50V

Ref.No	Part No.	Description		Remark
C836	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C837	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C838	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C839	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C840	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C841	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C842	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C843	1-124-779-00	ELECT 10MF	20%	16V
C844	1-126-205-11	ELECT 47MF	20%	6.3V
C845	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C846	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C848	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C849	1-164-005-11	CERAMIC CHIP 0.47MF		25V

CONNECTOR

Ref.No	Part No.	Description
CN501	1-568-165-11	CONNECTOR, FPC (1.0MM) (ZIF) 22P
CN502	1-568-165-11	CONNECTOR, FPC (1.0MM) (ZIF) 22P
CN601	1-566-547-11	CONNECTOR, FPC (NON ZIF) 15P
CN602	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P
CN801	1-566-530-11	CONNECTOR, FPC (ZIF) 14P
CN802	1-568-207-11	CONNECTOR, FPC (ZIF) 23P
CN803	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P
CN901	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P
CN902	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P

TRIMMER

Ref.No	Part No.	Description
CT601	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 330PF
CV501	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30PF
CV502	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30PF

DIODE

Ref.No	Part No.	Description
D211	8-719-800-76	DIODE 1SS226
D213	8-719-100-05	DIODE 1S2837
D216	8-719-940-45	DIODE DWA010
D217	8-719-940-45	DIODE DWA010
D218	8-719-100-05	DIODE 1S2837
D219	8-719-100-05	DIODE 1S2837
D401	8-719-800-76	DIODE 1SS226
D501	8-713-220-00	DIODE 1T32-2
D601	8-719-100-03	DIODE 1S2835
D602	8-719-100-05	DIODE 1S2837
D604	8-719-100-05	DIODE 1S2837
D605	8-713-220-00	DIODE 1T32-2
D606	8-719-100-05	DIODE 1S2837
D803	8-719-100-05	DIODE 1S2837

FILTER

Ref.No	Part No.	Description
FL201	1-409-446-21	FILTER, TRAP
FL202	1-236-186-21	FILTER, BAND PASS
FL203	1-577-162-11	FILTER, CERAMIC
FL601	1-236-266-11	FILTER, LOW PASS (YH)
FL602	1-236-267-11	FILTER, LOW PASS (YDL)
FL604	1-236-192-11	FILTER, LOW PASS

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
FL606	1-415-669-21	DL (LC)	
FL801	1-236-209-11	FILTER, LOW PASS	
		IC	
IC201	8-752-033-40	IC CXA1201Q	
IC202	8-752-324-87	IC CXL1502M	
IC203	8-752-034-40	IC CXA1200BQ	
IC501	8-759-140-26	IC UPD6145G-601	
IC502	8-759-970-80	IC MB673198U	
IC601	8-759-031-48	IC MC68HC05N4-SC406656	
IC602	8-759-932-54	IC MC14066BF	
IC603	8-759-100-95	IC UPC324G2	
IC604	8-752-326-08	IC CXD1159Q	
IC606	8-752-033-34	IC CXA1072R	
IC607	8-752-032-48	IC CXA1157M	
IC608	8-759-946-00	IC MB88341PFV	
IC609	8-759-946-00	IC MB88341PFV	
IC610	8-759-937-56	IC S-8054ALB-LM-S	
IC801	8-752-326-18	IC CXD1204R	
IC802	8-759-031-63	IC MC68HC05C4-SC403717	
IC803	8-759-971-93	IC MSM6219GS-VK	
IC804	8-759-946-00	IC MB88341PFV	
IC805	8-759-030-35	IC MPC1725MR	
IC806	8-759-135-80	IC UPC358G2	
IC807	8-759-701-24	IC NJM3414M	
IC808	8-759-135-80	IC UPC358G2	
IC810	8-759-231-23	IC TK10500M	
		JACK	
J201	1-537-142-11	TERMINAL BOARD (AUDIO/RFU DC/VIDEO OUT)	
J202	1-568-409-11	JACK, PIN 2P (VIDEO/AUDIO IN)	(Australian, E)
		COIL	
L201	1-412-032-21	INDUCTOR CHIP 100UH	
L202	1-412-026-11	INDUCTOR CHIP 1UH	
L203	1-412-032-21	INDUCTOR CHIP 100UH	
L204	1-412-031-11	INDUCTOR CHIP 47UH	
L205	1-412-031-11	INDUCTOR CHIP 47UH	
L208	1-412-029-11	INDUCTOR CHIP 10UH	
L209	1-412-032-21	INDUCTOR CHIP 100UH	
L210	1-410-387-11	INDUCTOR CHIP 33UH	
L211	1-410-656-11	INDUCTOR CHIP 150UH	
L212	1-410-381-11	INDUCTOR CHIP 10UH	
L213	1-410-657-21	INDUCTOR CHIP 180UH	
L214	1-408-797-11	INDUCTOR CHIP 470UH	
L215	1-408-795-21	INDUCTOR CHIP 330UH	
L216	1-408-795-21	INDUCTOR CHIP 330UH	
L217	1-410-657-21	INDUCTOR CHIP 180UH	
L219	1-412-032-21	INDUCTOR CHIP 100UH	
L220	1-410-380-31	INDUCTOR CHIP 8.2UH	
L221	1-408-795-21	INDUCTOR CHIP 330UH	
L222	1-410-655-11	INDUCTOR CHIP 120UH	
L223	1-410-393-11	INDUCTOR CHIP 100UH	
L224	1-410-656-11	INDUCTOR CHIP 150UH	
L227	1-410-389-11	INDUCTOR CHIP 47UH	
L228	1-410-388-21	INDUCTOR CHIP 39UH	
L401	1-410-390-11	INDUCTOR CHIP 56UH	
L402	1-410-387-11	INDUCTOR CHIP 33UH	
L404	1-410-383-11	INDUCTOR CHIP 15UH	
L405	1-410-388-21	INDUCTOR CHIP 39UH	
L501	1-410-390-11	INDUCTOR CHIP 56UH	
L502	1-412-032-21	INDUCTOR CHIP 100UH	
L503	1-408-797-11	INDUCTOR CHIP 470UH	
L601	1-412-031-11	INDUCTOR CHIP 47UH	
L602	1-410-381-11	INDUCTOR CHIP 10UH	
L603	1-412-031-11	INDUCTOR CHIP 47UH	
L604	1-412-026-11	INDUCTOR CHIP 1UH	
L605	1-412-026-11	INDUCTOR CHIP 1UH	
L606	1-412-026-11	INDUCTOR CHIP 1UH	
L607	1-412-032-21	INDUCTOR CHIP 100UH	
L608	1-412-029-11	INDUCTOR CHIP 10UH	
L609	1-412-032-21	INDUCTOR CHIP 100UH	
L610	1-412-029-11	INDUCTOR CHIP 10UH	
L613	1-412-031-11	INDUCTOR CHIP 47UH	
L614	1-410-657-21	INDUCTOR CHIP 180UH	
L801	1-410-655-31	INDUCTOR CHIP 120UH	
		TRANSISTOR	
Q202	8-729-100-66	TRANSISTOR 2SC1623	
Q203	8-729-100-66	TRANSISTOR 2SC1623	
Q204	8-729-106-60	TRANSISTOR 2SB1115A	
Q206	8-729-901-01	TRANSISTOR DTC144EK	
Q207	8-729-901-01	TRANSISTOR DTC144EK	
Q208	8-729-901-01	TRANSISTOR DTC144EK	
Q209	8-729-100-76	TRANSISTOR 2SA812	
Q210	8-729-101-07	TRANSISTOR 2SB804-AW	
Q211	8-729-901-01	TRANSISTOR DTC144EK	
Q212	8-729-901-01	TRANSISTOR DTC144EK	
Q213	8-729-100-66	TRANSISTOR 2SC1623	
Q215	8-729-100-66	TRANSISTOR 2SC1623	
Q216	8-729-100-66	TRANSISTOR 2SC1623	
Q217	8-729-100-76	TRANSISTOR 2SA812	
Q222	8-729-106-60	TRANSISTOR 2SB1115A	
Q223	8-729-901-01	TRANSISTOR DTC144EK	
Q224	8-729-102-07	TRANSISTOR 2SC2223-F13	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
Q225	8-729-100-66	TRANSISTOR 2SC1623	
Q226	8-729-805-69	TRANSISTOR 2SA1341	
Q226	8-729-901-06	TRANSISTOR DTA144EK-T-96	
Q227	8-729-805-41	TRANSISTOR 2SC3398	
Q228	8-729-100-66	TRANSISTOR 2SC1623	
Q229	8-729-100-76	TRANSISTOR 2SA812	
Q230	8-729-122-63	TRANSISTOR 2SA1226	
Q231	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q232	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q233	8-729-100-76	TRANSISTOR 2SA812	
Q241	8-729-805-69	TRANSISTOR 2SA1341	
Q242	8-729-901-01	TRANSISTOR DTC144EK	
Q243	8-729-100-66	TRANSISTOR 2SC1623	
Q244	8-729-901-01	TRANSISTOR DTC144EK	
Q250	8-729-100-66	TRANSISTOR 2SC1623	
Q251	8-729-100-76	TRANSISTOR 2SA812	
Q252	8-729-805-41	TRANSISTOR 2SC3398 (AEP, UK)	
Q253	8-729-100-66	TRANSISTOR 2SC1623 (AEP, UK)	
Q254	8-729-100-66	TRANSISTOR 2SC1623	
Q401	8-729-402-84	TRANSISTOR XN4601	
Q403	8-729-402-13	TRANSISTOR XN1216	
Q405	8-729-100-66	TRANSISTOR 2SC1623	
Q406	8-729-100-66	TRANSISTOR 2SC1623	
Q407	8-729-100-66	TRANSISTOR 2SC1623	
Q408	8-729-100-76	TRANSISTOR 2SA812	
Q409	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q410	8-729-100-76	TRANSISTOR 2SA812	
Q501	8-729-100-66	TRANSISTOR 2SC1623	
Q502	8-729-100-66	TRANSISTOR 2SC1623	
Q551	8-729-805-69	TRANSISTOR 2SA1341	
Q552	8-729-902-XX	TRANSISTOR DTC114TK	
Q553	8-729-902-XX	TRANSISTOR DTC114TK	
Q602	8-729-100-66	TRANSISTOR 2SC1623	
Q603	8-729-216-22	TRANSISTOR 2SA1162	
Q604	8-729-805-42	TRANSISTOR 2SC3859	
Q605	8-729-901-01	TRANSISTOR DTC144EK	
Q606	8-729-901-01	TRANSISTOR DTC144EK	
Q607	8-729-805-42	TRANSISTOR 2SC3859	
Q608	8-729-100-66	TRANSISTOR 2SC1623	
Q609	8-729-100-66	TRANSISTOR 2SC1623	
Q610	8-729-216-22	TRANSISTOR 2SA1162	
Q611	8-729-100-66	TRANSISTOR 2SC1623	
Q612	8-729-216-22	TRANSISTOR 2SA1162	
Q613	8-729-100-66	TRANSISTOR 2SC1623	
Q614	8-729-216-22	TRANSISTOR 2SA1162	
Q615	8-729-100-65	TRANSISTOR 2SC1623	
Q616	8-729-100-66	TRANSISTOR 2SC1623	
Q617	8-729-100-66	TRANSISTOR 2SC1623	
Q618	8-729-100-66	TRANSISTOR 2SC1623	
Q619	8-729-100-66	TRANSISTOR 2SC1623	
Q620	8-729-100-66	TRANSISTOR 2SC1623	
Q621	8-729-805-42	TRANSISTOR 2SC3859	
Q622	8-729-805-42	TRANSISTOR 2SC3859	
Q623	8-729-805-42	TRANSISTOR 2SC3859	
Q624	8-729-805-42	TRANSISTOR 2SC3859	
Q625	8-729-216-22	TRANSISTOR 2SA1162	
Q626	8-729-100-66	TRANSISTOR 2SC1623	
Q627	8-729-216-22	TRANSISTOR 2SA1162	
Q628	8-729-216-22	TRANSISTOR 2SA1162	
Q629	8-729-920-08	TRANSISTOR DTC124TK	
Q630	8-729-216-22	TRANSISTOR 2SA1162	
Q631	8-729-216-22	TRANSISTOR 2SA1162	
Q632	8-729-100-66	TRANSISTOR 2SC1623	
Q633	8-729-216-22	TRANSISTOR 2SA1162	
Q634	8-729-100-66	TRANSISTOR 2SC1623	
Q635	8-729-216-22	TRANSISTOR 2SA1162	
Q638	8-729-216-22	TRANSISTOR 2SA1162	
Q639	8-729-805-42	TRANSISTOR 2SC3859	
Q640	8-729-100-76	TRANSISTOR 2SA812	
Q641	8-729-100-66	TRANSISTOR 2SC1623	
Q642	8-729-216-22	TRANSISTOR 2SA1162	
Q643	8-729-100-66	TRANSISTOR 2SC1623	
Q644	8-729-216-22	TRANSISTOR 2SA1162	
Q645	8-729-100-66	TRANSISTOR 2SC1623	
Q646	8-729-216-22	TRANSISTOR 2SA1162	
Q647	8-729-100-66	TRANSISTOR 2SC1623	
Q648	8-729-216-22	TRANSISTOR 2SA1162	
Q801	8-729-216-22	TRANSISTOR 2SA1162	
Q802	8-729-100-66	TRANSISTOR 2SC1623	
Q803	8-729-402-19	TRANSISTOR XN6501	
Q804	8-729-402-19	TRANSISTOR XN6501	
Q805	8-729-901-01	TRANSISTOR DTC144EK	
Q806	8-729-100-66	TRANSISTOR 2SC1623	
Q807	8-729-100-66	TRANSISTOR 2SC1623	
Q809	8-729-805-42	TRANSISTOR 2SC3859	
Q810	8-729-805-42	TRANSISTOR 2SC3859	
Q811	8-729-901-06	TRANSISTOR DTA144EK	
Q812	8-729-901-06	TRANSISTOR DTA144EK	
Q816	8-729-100-66	TRANSISTOR 2SC1623	
Q817	8-729-216-22	TRANSISTOR 2SA1162	
Q818	8-729-100-66	TRANSISTOR 2SC1623	
Q819	8-729-805-25	TRANSISTOR 2SB1121	
Q820	8-729-100-66	TRANSISTOR 2SC1623	
Q822	8-729-216-22	TRANSISTOR 2SA1162	
Q824	8-729-901-01	TRANSISTOR DTC144EK	
Q825	8-729-901-01	TRANSISTOR DTC144EK	
Q826	8-729-216-22	TRANSISTOR 2SA1162	
Q827	8-729-100-66	TRANSISTOR 2SC1623	
Q828	8-729-216-22	TRANSISTOR 2SA1162	
Q830	8-729-805-42	TRANSISTOR 2SC3859	

RESISTOR

Ref.No	Part No.	Description				Remark
R201	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R202	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R203	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R204	1-216-089-00	METAL GLAZE	47K	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R205	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R206	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R207	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R208	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R209	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R210	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R211	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R212	1-216-015-00	METAL GLAZE	39	5%	1/10W	(Australian, E)
R213	1-216-015-00	METAL GLAZE	39	5%	1/10W	(Australian, E)
R214	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R215	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R216	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R218	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R219	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R220	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R221	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R223	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R224	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R226	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R227	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R231	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R232	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R233	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R234	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R235	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R236	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R237	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R238	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R241	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R242	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R243	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R246	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R247	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R248	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R249	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R250	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R251	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R264	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R265	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R266	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R267	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R268	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R269	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R270	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R271	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R274	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R275	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R276	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R277	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R279	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R281	1-216-049-00	METAL GLAZE	1K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R282	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R283	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R284	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R285	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R287	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R288	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R289	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R290	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R291	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R292	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R293	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R294	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R295	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R296	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R297	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R298	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R299	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R300	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R301	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R302	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R303	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R304	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R305	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R306	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R307	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R309	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R310	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R311	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R312	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R313	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R314	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R315	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R316	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R317	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R318	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R319	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R320	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R321	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R322	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R323	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R324	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R325	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R327	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R348	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R351	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R355	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R356	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R357	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R369	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R374	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R376	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R377	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R378	1-216-089-00	METAL GLAZE	47K	5%	1/10W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R380	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R381	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R383	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R384	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R385	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R386	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R387	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R389	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R395	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R396	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R398	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R399	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R401	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R402	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R403	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R404	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R405	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R406	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R407	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R408	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R409	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R410	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R411	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R413	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R414	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R415	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R416	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R417	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R418	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R419	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R420	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R421	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R422	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R424	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R425	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R426	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R427	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R428	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R429	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R430	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R431	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R432	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R433	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R451	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R452	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R501	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R502	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R503	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R504	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R505	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R506	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R507	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R508	1-216-075-00	METAL GLAZE	12K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R509	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R510	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R511	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R512	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R513	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R514	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R515	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R516	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R518	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R519	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R520	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R521	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R522	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R523	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R524	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R525	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R551	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R552	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R553	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R554	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R603	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R604	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R605	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R606	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R607	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R608	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R609	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R610	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R611	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R612	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R613	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R614	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R615	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R616	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R617	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R618	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R619	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R620	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R621	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R622	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R623	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R624	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R625	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R626	1-216-068-00	METAL GLAZE	6.2K	5%	1/10W	
R627	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R628	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R629	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R630	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R631	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R632	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R633	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R634	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R635	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R636	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R637	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R638	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R639	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R640	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R641	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R642	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R643	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R644	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R645	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R646	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R647	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R648	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R649	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R650	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R651	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R652	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R653	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R654	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R655	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R656	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R657	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R658	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R659	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R660	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R661	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R662	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R663	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R664	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R667	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R668	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R669	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R670	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R671	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R672	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R673	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R674	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R675	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R676	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R677	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R678	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R679	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R680	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R681	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R682	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R683	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R685	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R686	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R687	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R688	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R689	-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
[illegible]	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R697	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R698	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R700	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R701	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R702	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R703	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R704	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R705	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R706	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R707	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R708	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R709	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R710	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R711	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R712	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R713	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R714	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R715	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R716	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R717	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R718	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R719	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R720	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R721	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R722	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R723	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R724	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R725	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R726	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R727	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R728	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R729	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R730	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R731	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R732	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R733	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R734	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R735	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R736	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R737	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R738	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R739	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R740	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R741	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R742	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R744	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R745	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R746	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R747	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R749	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R750	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R751	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R752	1-216-047-00	METAL GLAZE	820	5%	1/10W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R753	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R754	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R755	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R757	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R758	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R759	1-216-072-00	METAL GLAZE	9.1K	5%	1/10W	
R760	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R761	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R762	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R763	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R764	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R765	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R766	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R767	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R768	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R769	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R770	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R771	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R772	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R773	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R774	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R776	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R777	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R780	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R781	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R782	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R783	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R785	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R786	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R793	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R794	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R801	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R802	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R803	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R804	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R805	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R806	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R807	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R808	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R809	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R810	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R811	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R812	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R813	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R814	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R815	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R816	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R817	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R818	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R819	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R820	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R821	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R822	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R823	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R824	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R825	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R826	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R827	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R828	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R829	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R831	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R832	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R833	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R836	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R837	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R838	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R839	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R840	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R841	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R843	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R844	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R845	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R846	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R847	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R848	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R849	1-216-144-00	METAL GLAZE	5.6	5%	1/8W	
R850	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R857	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R858	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R859	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R860	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R861	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R862	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R863	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R864	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R865	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R866	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R867	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R868	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R869	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R870	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R871	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R872	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R873	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R874	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R875	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R876	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R877	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R878	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R879	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R880	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R881	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R882	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R883	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R884	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R885	1-216-099-00	METAL GLAZE	120K	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R886	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R887	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R888	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R889	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R890	1-216-144-00	METAL GLAZE	5.6	5%	1/8W	
R891	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R892	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R893	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R894	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R895	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R896	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R897	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R898	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R899	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	

VARIABLE RESISTOR

RV201	1-230-874-11	RES, ADJ, METAL GLAZE 100K
RV202	1-230-870-11	RES, ADJ, METAL GLAZE 10K
RV203	1-230-874-11	RES, ADJ, METAL GLAZE 100K
RV204	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV205	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV207	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV208	1-230-866-11	RES, ADJ, METAL GLAZE 470
RV401	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV402	1-230-867-11	RES, ADJ, METAL GLAZE 1K
RV552	1-230-874-11	RES, ADJ, METAL GLAZE 100K
RV801	1-230-875-21	RES, ADJ, METAL GLAZE 220K

CRYSTAL

X201	1-577-117-21	VIBRATOR, CRYSTAL (4.43MHz)
X601	1-577-118-11	VIBRATOR, LITHIUM NIOBATE (4MHz)
X602	1-567-733-11	VIBRATOR, CRYSTAL (17MHz)
X603	1-577-119-11	OSCILLATOR, CRYSTAL (28MHz)

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*A-7051-610-A PJ-20 BOARD, COMPLETE (Ref.No.4,000 Series)

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CAPACITOR

C101	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C102	1-124-778-00	ELECT	22MF	20%	6.3V
C103	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C104	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C105	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C106	1-126-198-11	ELECT	4.7MF	20%	35V
C107	1-126-198-11	ELECT	4.7MF	20%	35V
C108	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C109	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C110	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C111	1-126-193-11	ELECT	1MF	20%	50V
C112	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C113	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C114	1-163-093-00	CERAMIC CHIP	10PF	5%	50V

Ref.No	Part No.	Description				Remark
C115	1-163-086-00	CERAMIC CHIP	3PF	0.25PF	50V	
C116	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C117	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C118	1-163-033-00	CERAMIC CHIP	0.022MF		50V	
C119	1-163-033-00	CERAMIC CHIP	0.022MF		50V	
C120	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C121	1-163-131-00	CERAMIC CHIP	390PF	5%	50V	
C122	1-163-033-00	CERAMIC CHIP	0.022MF		50V	
C123	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C124	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V	
C125	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C126	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C127	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C128	1-124-779-00	ELECT	10MF	20%	16V	

CONNECTOR

CN202	*1-565-882-11	PIN, CONNECTOR (PC BOARD) 10P

DIODE

D101	8-719-100-05	DIODE 1S2837
D102	8-719-800-76	DIODE 1SS226

DELAY LINE

DL101	1-415-593-11	DELAY LINE, ULTRASONIC GLASS

FILTER

FL101	1-236-188-21	FILTER, BAND PASS

IC

IC101	8-759-605-61	IC CXA1203N

COIL

L101	1-412-031-11	INDUCTOR CHIP	47UH
L102	1-412-032-21	INDUCTOR CHIP	100UH
L103	1-410-383-11	INDUCTOR CHIP	15UH
L104	1-410-385-11	INDUCTOR CHIP	22UH

TRANSISTOR

Q101	8-729-901-01	TRANSISTOR DTC144EK
Q102	8-729-901-06	TRANSISTOR DTA144EK
Q103	8-729-100-66	TRANSISTOR 2SC1623
Q104	8-729-100-66	TRANSISTOR 2SC1623
Q105	8-729-100-66	TRANSISTOR 2SC1623
Q106	8-729-100-66	TRANSISTOR 2SC1623
Q107	8-729-100-66	TRANSISTOR 2SC1623
Q108	8-729-100-66	TRANSISTOR 2SC1623
Q109	8-729-100-66	TRANSISTOR 2SC1623
Q110	8-729-100-66	TRANSISTOR 2SC1623

RESISTOR

R101	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R102	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R103	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R104	1-216-699-11	METAL CHIP	100K	0.50%	1/10W
R105	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R106	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R107	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R108	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R109	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R110	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R111	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R112	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R113	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R114	1-216-049-00	METAL GLAZE	1K	5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R116	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R117	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R118	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R119	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R120	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R121	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R122	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R123	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R124	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R125	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R126	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R127	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R128	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R129	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R130	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R131	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R132	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R133	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R134	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R145	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R146	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R147	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R148	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R149	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R150	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R151	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R152	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R153	1-216-043-00	METAL GLAZE	560	5%	1/10W	

VARIABLE RESISTOR

RV102	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV103	1-230-870-11	RES, ADJ, METAL GLAZE 10K
RV104	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K

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*A-7061-605-A PS-180P BOARD, COMPLETE (Ref.No.4,000 Series)
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CAPACITOR

C936	1-124-438-00	ELECT	1MF	20%	50V
C937	1-124-438-00	ELECT	1MF	20%	50V
C938	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C939	1-124-438-00	ELECT	1MF	20%	50V
C940	1-164-161-11	CERAMIC CHIP	0.0022MF		50V
C941	1-127-489-00	ELECT(SOLID)	10MF	20%	10V
C942	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C943	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C944	1-127-561-11	ELECT(SOLID)	33MF	20%	10V
C945	1-162-637-11	CERAMIC CHIP	0.47MF		16V
C955	1-127-489-00	ELECT(SOLID)	10MF	20%	10V
C957	1-124-589-11	ELECT	47MF	20%	10V
C958	1-124-589-11	ELECT	47MF	20%	10V
C959	1-124-589-11	ELECT	47MF	20%	10V

Ref.No	Part No.	Description			Remark
C961	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C962	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C963	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C964	1-124-234-00	ELECT	22MF	20%	16V
C965	1-124-261-00	ELECT	10MF	20%	50V
C966	1-124-261-00	ELECT	10MF	20%	50V
C967	1-127-509-00	ELECT(SOLID)	3.3MF	20%	25V
C968	1-124-598-11	ELECT	22MF	20%	25V
C978	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C984	1-124-570-11	ELECT	220MF	20%	16V
C985	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C988	1-164-161-11	CERAMIC CHIP	0.0022MF		50V
C989	1-164-161-11	CERAMIC CHIP	0.0022MF		50V
C990	1-164-161-11	CERAMIC CHIP	0.0022MF		50V
C991	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V

CONNECTOR

CN901	*1-506-481-11	PIN, CONNECTOR 2P

DIODE

D935	⚠8-719-106-71	DIODE RD12M-B2
D936	8-719-800-76	DIODE 1SS226
D937	8-719-800-76	DIODE 1SS226
D938	8-719-510-11	DIODE D1FS4
D939	8-719-801-48	DIODE 1SS193
D940	8-719-801-48	DIODE 1SS193
D941	8-719-802-36	DIODE 1SS250
D942	8-719-801-48	DIODE 1SS193
D943	8-719-801-48	DIODE 1SS193

IC

IC935	8-759-937-36	IC TL1451ACNS

JACK

J901	1-535-658-51	TERMINAL BOARD (BATTERY)

COIL

L935	1-410-690-11	COIL, CHOKE 22UH
L937	1-421-918-11	COIL, CHOKE 10UH
L938	1-410-626-11	COIL, CHOKE 47UH
L939	1-410-626-11	COIL, CHOKE 47UH
L940	1-408-978-21	INDUCTOR 47UH
L942	1-410-626-11	COIL, CHOKE 47UH
L944	1-410-385-11	INDUCTOR CHIP 22UH
L946	1-421-918-11	COIL, CHOKE 10UH
L951	1-410-658-11	INDUCTOR CHIP 220UH
L952	1-412-026-11	INDUCTOR CHIP 1UH
L953	1-412-026-11	INDUCTOR CHIP 1UH
L954	1-412-026-11	INDUCTOR CHIP 1UH
L955	1-412-026-11	INDUCTOR CHIP 1UH
L956	1-412-026-11	INDUCTOR CHIP 1UH
L957	1-412-026-11	INDUCTOR CHIP 1UH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

IC LINK

Ref.No	Part No.	Description	Remark
PS901	⚠1-532-841-21	LINK, IC (SOC 1600)	
PS902	⚠1-532-841-21	LINK, IC (SOC 1600)	
PS903	⚠1-532-841-21	LINK, IC (SOC 1600)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q935	8-729-805-43	TRANSISTOR 2SC3396	
Q936	8-729-901-05	TRANSISTOR DTA124EK	
Q937	8-729-901-05	TRANSISTOR DTA124EK	
Q938	8-729-805-43	TRANSISTOR 2SC3396	
Q939	8-729-901-05	TRANSISTOR DTA124EK	
Q940	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q941	⚠8-729-105-29	TRANSISTOR 2SA1385	
Q942	⚠8-729-805-25	TRANSISTOR 2SB1121	
Q943	8-729-901-05	TRANSISTOR DTA124EK	
Q944	8-729-805-43	TRANSISTOR 2SC3396	
Q945	8-729-100-76	TRANSISTOR 2SA812	
Q946	8-729-100-76	TRANSISTOR 2SA812	
Q947	⚠8-729-140-55	TRANSISTOR 2SK739	
Q952	8-729-901-04	TRANSISTOR DTA114EK	
Q953	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description				Remark
R935	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R936	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R937	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R938	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R939	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R940	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R941	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R942	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R943	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R944	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R945	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R946	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R947	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R948	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R949	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R950	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R951	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R953	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R954	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R955	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R956	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R957	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R958	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R959	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R960	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R961	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R962	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R975	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R978	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R985	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R986	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R987	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R990	1-216-121-00	METAL GLAZE	1M	5%	1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV936	1-230-867-11	RES, ADJ, METAL GRAZE 1K	
RV937	1-230-866-11	RES, ADJ, METAL GRAZE 470	
RV938	1-230-869-11	RES, ADJ, METAL GRAZE 4.7K	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T936	1-449-454-11	TRANSFORMER, CONVERTER	

CONNECTOR

Ref.No	Part No.	Description	Remark
W901	1-564-610-11	CONNECTOR, BOARD TO BOARD	
W902	1-564-610-11	CONNECTOR, BOARD TO BOARD	

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*A-7061-606-A LI-10 BOARD, COMPLETE (Ref.No.3,000 Series)
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*1-630-547-11 LI-10 BOARD

CAPACITOR

Ref.No	Part No.	Description				Remark
C901	1-163-115-00	CERAMIC CHIP	82PF	5%	50V	
C902	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C903	1-163-095-00	CERAMIC CHIP	12PF	5%	50V	
C904	1-124-778-00	ELECT	22MF	20%	6.3V	
C905	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C906	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C907	1-162-638-11	CERAMIC CHIP	1MF		16V	
C908	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C910	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C911	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C912	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C914	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V	
C915	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C916	1-162-638-11	CERAMIC CHIP	1MF		16V	
C917	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C918	1-162-638-11	CERAMIC CHIP	1MF		16V	

TRIMMER

Ref.No	Part No.	Description	Remark
CV901	1-141-331-11	CAP, VAR, TRIMMER (CHIP) (30PF)	

DIODE

Ref.No	Part No.	Description	Remark
D901	8-713-300-88	DIODE 1T33C	

IC

Ref.No	Part No.	Description	Remark
IC901	8-759-101-12	IC UPC311G2	
IC902	8-759-983-54	IC MB87485	
IC903	8-759-945-09	IC MB8464-12LLPF	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		COIL	
L901	1-410-377-11	INDUCTOR CHIP 4.7UH	
L902	1-410-384-11	INDUCTOR CHIP 18UH	
L903	1-410-369-11	INDUCTOR CHIP 1UH	
L904	1-410-377-11	INDUCTOR CHIP 4.7UH	
		TRANSISTOR	
Q901	8-729-100-66	TRANSISTOR 2SC1623	
Q902	8-729-100-66	TRANSISTOR 2SC1623	
Q903	8-729-216-22	TRANSISTOR 2SA1162	
Q904	8-729-901-01	TRANSISTOR DTC144EK	
		RESISTOR	
R901	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R902	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R903	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R904	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R905	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R906	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R907	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R908	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R909	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R910	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R911	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R912	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R913	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R914	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R915	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R916	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R917	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R918	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R940	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R941	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R942	1-216-037-00	METAL GLAZE 330 5% 1/10W	
		CONNECTOR	
W802	1-574-457-11	CABLE, FLAT (1.0MM PITCH) 23P	

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*A-7061-607-A CK-8P BOARD, COMPLETE (Ref.No.4,000 Series)
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Ref.No	Part No.	Description	Remark
		CAPACITOR	
C651	1-163-093-00	CERAMIC CHIP 10PF 5% 50V	
C652	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C653	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C654	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C655	1-124-257-00	ELECT 2.2MF 20% 50V	
C656	1-124-257-00	ELECT 2.2MF 20% 50V	
C657	1-126-157-11	ELECT 10MF 20% 16V	
C658	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C659	1-162-638-11	CERAMIC CHIP 1MF 16V	
C660	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
		TRIMMER	
CV651	1-141-331-11	CAP, VAR, TRIMMER (CHIP) 30PF	
		DIODE	
D651	8-719-938-72	DIODE SB01-05CP	
D652	8-719-100-05	DIODE 1S2837	
D653	8-719-100-05	DIODE 1S2837	
D654	8-719-100-05	DIODE 1S2837	
D655	8-719-100-05	DIODE 1S2837	
D656	8-719-100-05	DIODE 1S2837	
D657	8-719-100-05	DIODE 1S2837	
D658	8-719-100-05	DIODE 1S2837	
		IC	
IC651	8-759-143-37	IC UPD7508BGB-505	
		COIL	
L651	1-410-391-11	INDUCTOR CHIP 68UH	
		TRANSISTOR	
Q651	8-729-901-03	TRANSISTOR DTC144WK	
Q652	8-729-100-76	TRANSISTOR 2SA812	
Q653	8-729-901-03	TRANSISTOR DTC144WK	
Q654	8-729-220-93	TRANSISTOR 2SK209G	
Q655	8-729-100-76	TRANSISTOR 2SA812	
Q656	8-729-100-76	TRANSISTOR 2SA812	
Q657	8-729-100-76	TRANSISTOR 2SA812	
Q658	8-729-100-66	TRANSISTOR 2SC1623	
Q659	8-729-100-66	TRANSISTOR 2SC1623	
Q660	8-729-100-76	TRANSISTOR 2SA812	
Q661	8-729-100-76	TRANSISTOR 2SA812	
Q662	8-729-902-XX	TRANSISTOR DTC114TK	
Q663	8-729-902-XX	TRANSISTOR DTC114TK	
Q664	8-729-100-76	TRANSISTOR 2SA812	
		RESISTOR	
R651	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R652	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R653	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R654	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R655	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R656	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R657	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R658	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R659	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R660	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R661	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R662	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R663	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R664	1-216-093-00	METAL GLAZE 68K 5% 1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R665	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R666	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R667	1-216-129-00	METAL GLAZE 2.2M 5% 1/10W	
R668	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R669	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R670	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R671	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R672	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R673	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R674	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R675	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R676	1-216-103-00	METAL GLAZE 180K 5% 1/10W	
R677	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R678	1-218-167-11	METAL GLAZE 330K 1% 1/10W	
R679	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R680	1-218-167-11	METAL GLAZE 330K 1% 1/10W	
R681	1-216-336-11	METAL GLAZE 47K 1% 1/10W	
R682	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R683	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R684	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R685	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R686	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R687	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R688	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R689	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R690	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R691	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R692	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R693	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R695	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R696	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R697	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R698	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R699	1-216-089-00	METAL GLAZE 47K 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV651	1-230-874-11	RES, ADJ, METAL GLAZE 100K	

SWITCH

Ref.No	Part No.	Description	Remark
S651	1-553-977-00	SWITCH, SLIDE (AUTO LOCK ON/OFF)	
S652	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (SHUTTER SPEED)	
S653	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)(BACK LIGHT)	
S654	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (WHITE BAL)	
S655	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (FOCUS)	
S656	1-554-088-00	SWITCH, KEY BOARD (COLOR/MODE)	
S657	1-554-088-00	SWITCH, KEY BOARD (MEMORY)	
S658	1-554-088-00	SWITCH, KEY BOARD (TITLE)	
S659	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (TIME SET)	
S660	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (DATA/+)	

CRYSTAL

Ref.No	Part No.	Description	Remark
X651	1-527-997-21	VIBRATOR, CRYSTAL (32.768KHz)	

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*1-629-379-21 DK-2P BOARD (Ref.No.5,000 Series)
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DIODE

Ref.No	Part No.	Description	Remark
D691	8-719-100-05	DIODE 1S2837	
D692	8-719-100-05	DIODE 1S2837	

SWITCH

Ref.No	Part No.	Description	Remark
S691	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (EDIT SEARCH +)	
S692	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (EDIT SEARCH -)	
S693	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (COUNTER RESET)	
S694	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (ZERO MEMO)	

CONNECTOR

Ref.No	Part No.	Description	Remark
W652	1-574-453-11	CABLE, FLAT (1.0MM PITCH) 6P	

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*A-7061-609-A VF-14P BOARD, COMPLETE (Ref.No.6,000 Series)
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CAPACITOR

Ref.No	Part No.	Description	Remark
C901	1-124-442-00	ELECT 330MF 20% 6.3V	
C903	1-163-077-00	CERAMIC CHIP 0.1MF 50V	
C904	1-126-160-11	ELECT 1MF 20% 50V	
C905	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C906	1-131-381-00	TANTALUM 47MF 10% 6.3V	
C907	1-162-638-11	CERAMIC CHIP 1MF 16V	
C908	1-136-165-00	FILM 0.1MF 5% 50V	
C909	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C910	1-124-587-11	ELECT 220MF 20% 6.3V	
C911	1-163-141-00	CERAMIC CHIP 0.001MF 5% 50V	
C912	⚠1-162-625-11	CERAMIC CHIP 0.0047MF 5% 50V	
C913	⚠1-162-625-11	CERAMIC CHIP 0.0047MF 5% 50V	
C914	⚠1-163-209-00	CERAMIC CHIP 0.0015MF 5% 50V	
C915	1-126-090-11	ELECT 82MF 20% 10V	
C916	1-126-094-11	ELECT 4.7MF 20% 35V	
C918	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C919	1-102-038-00	CERAMIC 0.001MF 500V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN903	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN904	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

DIODE

Ref.No	Part No.	Description	Remark
D903	8-719-400-20	DIODE MA152WA	

IC

Ref.No	Part No.	Description	Remark
IC901	8-759-420-01	IC AN2512S	

COIL

Ref.No	Part No.	Description	Remark
L901	1-410-831-21	INDUCTOR 82UH	
L902	1-408-976-21	INDUCTOR 33UH	
L903	⚠1-459-858-11	COIL, FERRITE (HLC)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q903	8-729-216-32	TRANSISTOR 2SA1163G-TE85R	
Q904	8-729-100-66	TRANSISTOR 2SC1623	
Q905	⚠8-729-106-68	TRANSISTOR 2SD1615-GP	

RESISTOR

Ref.No	Part No.	Description				Remark
R903	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R905	1-216-007-00	METAL GLAZE	18	5%	1/10W	
R906	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R908	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R909	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R910	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R911	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R912	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R913	1-216-107-00	METAL GLAZE	270K	1%	1/10W	
R914	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R915	1-216-306-11	METAL GLAZE	3.9	5%	1/10W	
R917	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R918	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R919	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R920	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R921	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R922	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R923	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R924	1-216-131-11	METAL GLAZE	2.7M	5%	1/10W	
R925	1-216-131-11	METAL GLAZE	2.7M	5%	1/10W	
R926	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R927	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R928	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R929	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R930	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R931	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R932	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R933	1-216-121-00	METAL GLAZE	1M	5%	1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV901	1-230-873-11	RES, ADJ, METAL GRAZE 47K	
RV902	1-230-866-11	RES, ADJ, METAL GRAZE 470	
RV904	1-228-762-00	RES, ADJ, METAL GLAZE 1M	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T901	⚠1-439-431-11	TRANSFORMER ASSY, FLYBACK	

THERMISTOR

Ref.No	Part No.	Description	Remark
TH901	1-807-938-11	THERMISTOR	

CONNECTOR

Ref.No	Part No.	Description	Remark
W901	1-540-019-21	SOCKET ASSY, CRT	

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Ref.No	Part No.	Description	Remark
	*1-629-384-21	LD-13P BOARD (Ref.No.7,000 Series) *************	
	*3-674-372-00	HOLDER (A), LED	

DIODE

Ref.No	Part No.	Description	Remark
D901	8-719-941-34	DIODE GL1HD51	
D902	8-719-812-41	DIODE TLR124	

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Ref.No	Part No.	Description	Remark
	*A-7061-628-A	MA-31P BOARD, COMPLETE (Ref.No.8,000 Series) ***********************	

CAPACITOR

Ref.No	Part No.	Description				Remark
C451	1-126-154-11	ELECT	47MF	20%	6.3V	
C452	1-163-081-00	CERAMIC CHIP	0.22MF		25V	
C453	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C455	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C456	1-163-077-00	CERAMIC CHIP	0.1MF		50V	
C457	1-163-081-00	CERAMIC CHIP	0.22MF		25V	
C458	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C459	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C460	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C464	1-163-077-00	CERAMIC CHIP	0.1MF		50V	
C465	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C466	1-126-154-11	ELECT	47MF	20%	6.3V	
C470	1-163-989-11	CERAMIC CHIP	0.033MF	10%	25V	
C471	1-163-038-00	CERAMIC CHIP	0.1MF		25V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN451	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P	
CN452	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	

IC

Ref.No	Part No.	Description	Remark
IC451	8-759-820-51	IC LA7293	

JACK

Ref.No	Part No.	Description	Remark
J451	1-507-921-00	JACK (MIC)	
J452	1-563-454-11	JACK, MINIATURE (DC OUT)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q451	8-729-100-66	TRANSISTOR 2SC1623	

RESISTOR

Ref.No	Part No.	Description	Remark
R451	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R452	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R453	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R454	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R455	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R456	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R457	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R459	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R460	1-216-043-00	METAL GLAZE 560 5% 1/10W	

SWITCH

Ref.No	Part No.	Description	Remark
S451	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (REC START/STOP)	

****

*A-7070-868-A RC-26P BOARD, COMPLETE (Ref.No.9,000 Series)
****

CONNECTOR

Ref.No	Part No.	Description	Remark
CN401	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P	
CN951	*1-568-521-11	PIN, CONNECTOR (PC BOARD) 13P	
CN952	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	

JACK

Ref.No	Part No.	Description	Remark
J951	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE CONTROL)	
J952	1-507-921-00	JACK (②)	

COIL

Ref.No	Part No.	Description	Remark
L951	1-410-369-11	INDUCTOR CHIP 1UH	
L952	1-410-369-11	INDUCTOR CHIP 1UH	
L953	1-410-369-11	INDUCTOR CHIP 1UH	
L954	1-410-369-11	INDUCTOR CHIP 1UH	

RESISTOR

Ref.No	Part No.	Description	Remark
R955	1-216-296-00	METAL GLAZE 0 5% 1/8W	

SWITCH

Ref.No	Part No.	Description	Remark
S951	1-553-977-00	SWITCH, SLIDE (STANDBY)	
S952	1-571-838-11	SWITCH, TACTIL (START/STOP)	

****

*1-629-377-21 KS-3P BOARD (Ref.No.7,000 Series)
****

CONNECOTR

Ref.No	Part No.	Description	Remark
CN501	*1-562-880-21	CONNECOTR, CARD EDGE 15P	

CONNECOTR

Ref.No	Part No.	Description	Remark
W502	1-574-456-11	CABLE, FLAT (1.0MM PITCH) 15P	

****

MISCELLANEOUS
****

Ref.No	Part No.	Description	Remark
	1-542-101-11	MICROPHONE (C-2020)	
	1-808-505-12	SENSOR (DEW)	
IC601	8-752-602-99	IC ICX027AK-2 (CCD IMAGER)	
M902	8-835-331-01	MOTOR, DC U-22A (CAPSTAN)	
M903	A-7040-160-A	MOTOR ASSY, THREADING	
M904	3-707-561-01	MOTOR ASSY, AF GEAR (FOCUS)	
M905	3-707-562-01	MOTOR ASSY, PZ GEAR (ZOOM)	
M906	3-707-560-01	METER ASSY, EE (IRIS)	
S901	1-571-837-11	SWITCH, PUSH (ZOOM)	
S902	3-707-566-01	SW ASSY, (F) LIMIT (FOCUS)	
S903	1-571-099-11	SWITCH (CASSETTE DOWN)	
V901	⚠1-452-482-11	CRT ASSY (M01JYZ60WB)	

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

ACCESSORIES AND PACKING MATERIALS

****

Part No.	Description	Remark
3-786-788-41	MANUAL, INSTRUCTION (English)	
3-786-788-51	MANUAL, INSTRUCTION (French, German, Spanish) (AEP/E MODEL)	
3-786-788-61	MANUAL, INSTRUCTION (Dutch, Swedish, Italian) (AEP MODEL)	
3-786-788-71	MANUAL, INSTRUCTION (Arabic) (E MODEL)	
*3-340-514-01	BAG, PROTECTION	
*3-732-952-01	CUSHION (UPPER)	
*3-732-953-01	CUSHION (LOWER)	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION (AEP/E MODEL)	

**** ACCESSORIES AND PACKING MATERIALS (KIT) ****

Part No.	Description
A-6767-706-A	RFU ADAPTOR RFU-89EA (AEP/E MODEL)
A-6767-707-A	RFU ADAPTOR RFU-89EA (UK MODEL)
A-6767-772-A	RFU ADAPTOR RFU-89EA (Australian MODEL)
1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE)
3-712-673-01	SCREWDRIVER
*3-733-937-41	INDIVIDUAL CARTON
*3-733-938-01	CUSHION, ACC

** AC ADAPTOR (AC-V30)
*** BATTERY PACK (NP-55)

Note:
** Mark part is available for repair service.
*** Mark part is available as a optional accessories.

****

HARDWARE LIST

****

SCREW

Part No.	Description
7-621-281-15	SCREW +P 2X2
7-621-772-00	SCREW +B 2X3
7-627-555-88	SCREW, PRECISION +P 1.4X1.8
7-627-553-37	SCREW (M2X3), SPECIAL HEAD
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3
7-627-853-48	PRECISION SCREW +P 2X4 TYPE 3

STAINLESS BALL

Part No.	Description
7-671-156-01	BALL, STAINLESS

****

When indicating parts by reference number, please include the board name.

SECTION 7
CAMERA ADJUSTMENTS

During the adjustment, see the adjustment element location to the adjustment from page 236.

7-1. PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

7-1-1. List of Servicing Jigs

- Oscilloscope
- Regulated power supply (2 units)
- Adjusting screwdriver
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Part Name	Part No.	Use
J-1	Filter (C14) for color temperature correction	J-6080-054-A	Auto white balance confirmation
J-2	ND filter 1.0	J-6080-808-A	Max. gain adjustment (two used)
	ND filter 0.4	J-6080-806-A	Iris adjustment, iris in/out adjustment (two used), max. gain adjustment
	ND filter 0.1	J-6080-807-A	Iris adjustment, iris in/out adjustment
J-3	Pattern box PTB-500 *	J-6029-140-A	
J-4	Pattern box color chart	J-6020-250-A	
J-5	Siemens star	J-6080-875-A	For flange back adjustment, auto-focus adjustment
J-6	AF microcomputer data reading jig	J-6082-025-A	
J-7	Remote control for adjustment	Modification of RM-95	

* PTB-100 is not available.

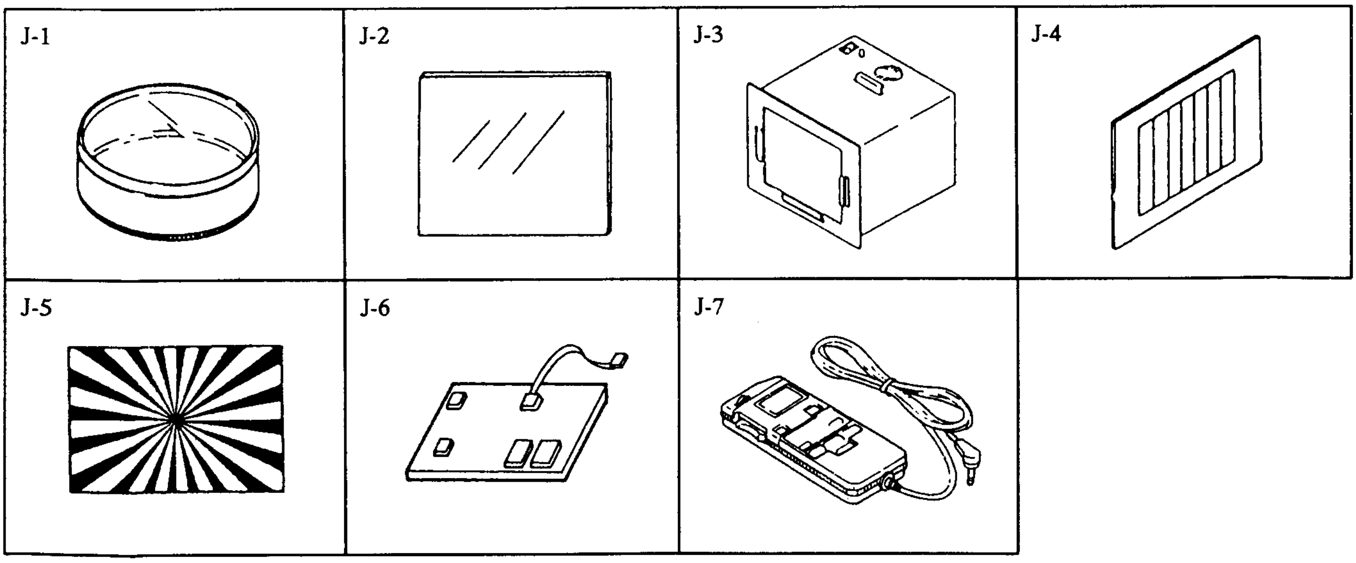


Fig. 7-1.

7-1-2. Preparations

Note: Refer to "2. DISASSEMBLY" for details on removal of the cabinet and various boards.

1) Connect the various devices for adjustment as shown in Fig. 7-3.
2) The EVF (electronic viewfinder) is needed for confirmation of the white balance mode and shutter speed. This can confirmed on the monitor screen by turning on the data screen (ON/OFF by S509 on VK-1P board). Remove CN901 on the CV-9 board when the EVF is not needed.
3) The mic amplifier (MA-31P board) is not needed. Remove CN401 on the CO-2P board.

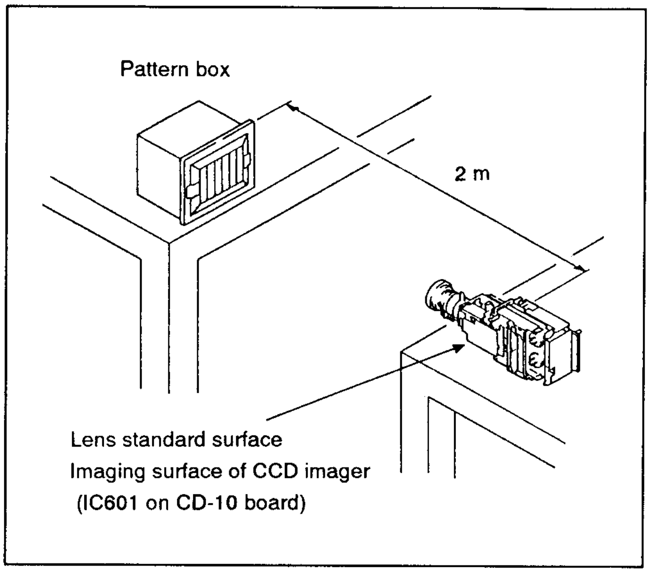
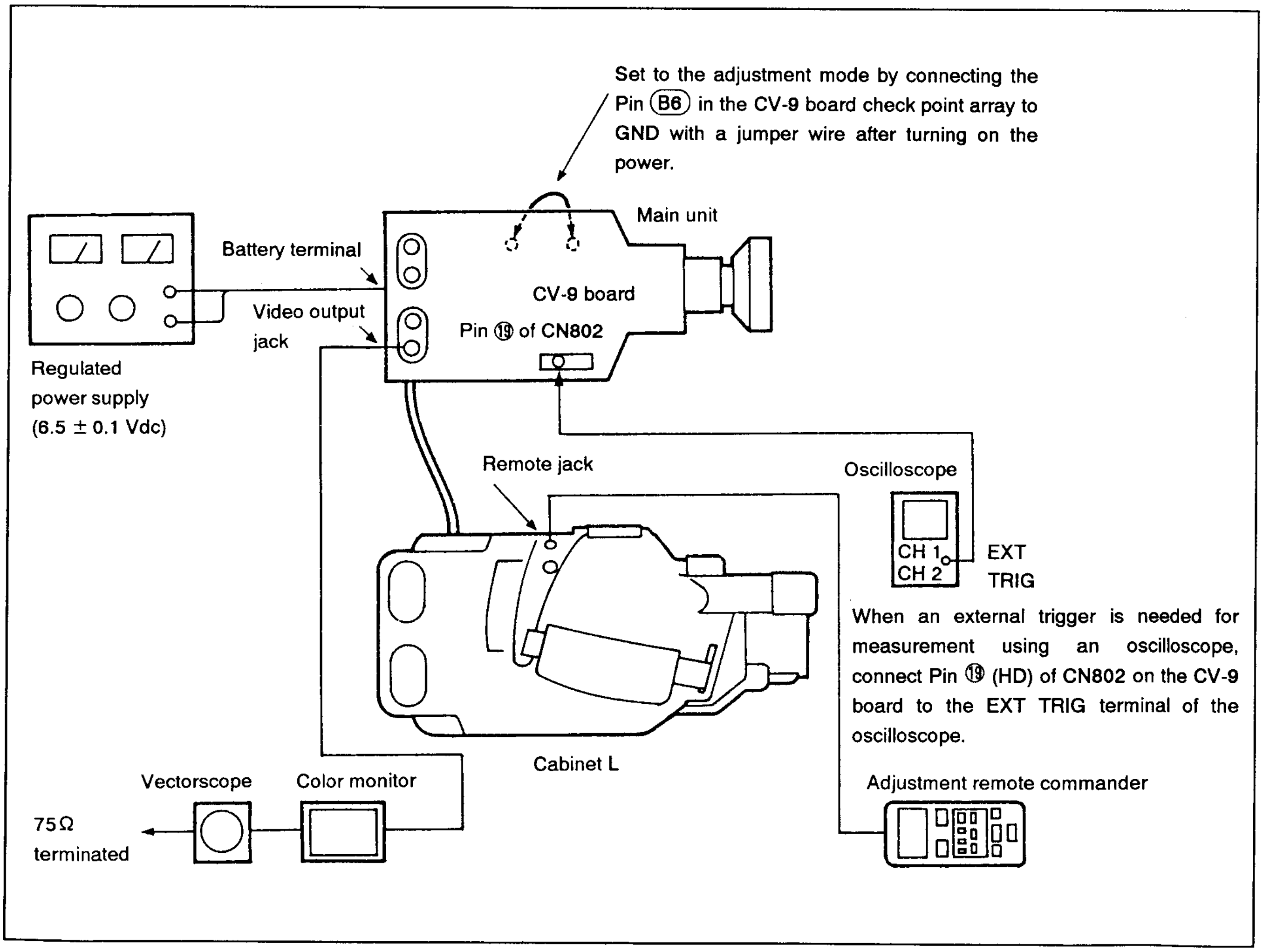

Pattern box
2 m
Lens standard surface
Imaging surface of CCD imager
(IC601 on CD-10 board)

Fig. 7-2.



Set to the adjustment mode by connecting the Pin (B6) in the CV-9 board check point array to GND with a jumper wire after turning on the power.

Main unit
Battery terminal
CV-9 board
Video output jack
Pin ⑲ of CN802
Regulated power supply (6.5 ± 0.1 Vdc)
Remote jack
Oscilloscope
CH 1
CH 2
EXT TRIG
Cabinet L
Vectorscope
Color monitor
75Ω terminated
Adjustment remote commander

When an external trigger is needed for measurement using an oscilloscope, connect Pin ⑲ (HD) of CN802 on the CV-9 board to the EXT TRIG terminal of the oscilloscope.

Fig. 7-3.

7-1-3. Precautions

1) Setting of Switches
Unless indicated otherwise, the switches are set to the following positions and adjustment is made without a cassette inserted.
   1. Camera/video power switch (S501 on VK-1P board) ......camera
   2. Standby switch (S951 on RC-26P board) ......ON
   3. Auto-lock switch (S651 on DK-2P board) ......OFF
   4. White balance button (S654 on DK-2P board) ......☼ (indoors white balance mode)
   5. Shutter button (S652 on DK-2P board) ......normal (1/50)

2) Adjustment Order
As a rule, the adjustments are performed in the listed order.

3) Subjects
   1. Color bar chart (standard picture frame)
   When performing adjustment using the color bar chart, adjusting the picture frame shown in Fig. 7-4. (standard picture frame).
   2. White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and use the zoom lever so that the white pattern has the same size and is the same position as the color bar chart (standard picture frame).

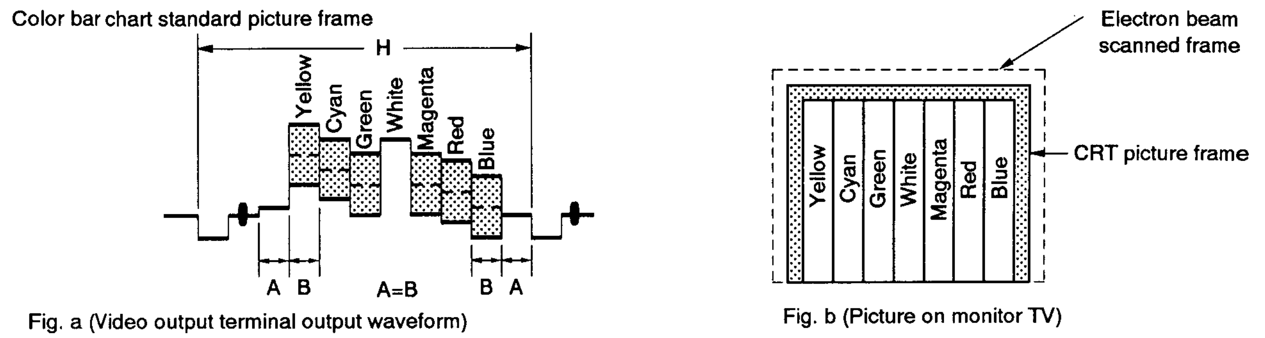

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

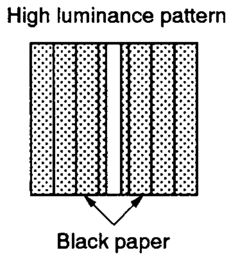
Fig. a (Video output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

   3. All white pattern
   Remove the color bar chart from the pattern box and set the zoom lever fully to the TELE (54 mm) side.
   4. High luminance pattern
   Create the high luminance pattern as shown in Fig. 7-5., and adjust for the picture frame shown in Fig. 7-6.
   5. Siemens star (J-6080-875-A)
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.


High luminance pattern
Black paper

Attach black paper over all sections of the pattern except for half the width of the white bar. Record this with the standard picture frame.

Fig. 7-5.

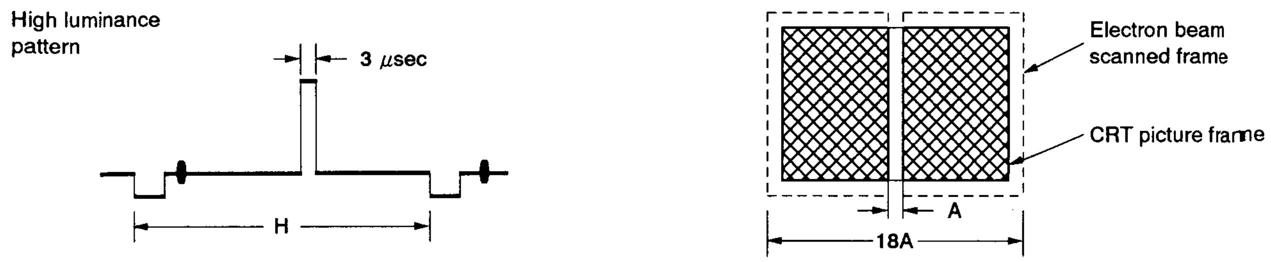

High luminance pattern
3 µsec
H
Electron beam scanned frame
CRT picture frame
A
18A

Fig. a (Video output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-6.

7-1-4. Adjustment Remote Commander

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microcomputer (IC601 on CV-9 board). This microcomputer reads the data written in the nonvolatile memory of the microcomputer and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.
Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.
The adjustment remote commander performs bidirectional communications with the camera block microcomputer using the remote control signal lines (LINCS). Adjustment addresses and adjustment data increment/decrement commands are sent to the camera block microcomputer from the adjustment remote commander. Adjustment addresses and adjustment data are sent from the camera block microcomputer to the adjustment remote commander.

1. Use of adjustment remote commander

Solder the lead wire to Pin (B6) (refer to 7-1-5) of the check point array on the CV-9 board.

1) Connect the adjustment remote commander to the remote terminal (J951 on RC-26P board). (Set the HOLD switch of the adjustment remote commander to the HOLD position (SERVICE position).)
2) Turn on the power of the main unit.
3) Connect Pin (B6) ($\overline{\text{CAM ADJ}}$) of the check point array to GND using a jumper wire.
   (This connection causes the EVR/AWB microcomputer to cease normal remote control operation and to begin adjustment dedicated communications.)
   Note: Be sure to make this connection only after turning on the power. The following will be displayed on the LCD of the adjustment remote commander if the connection is normal. (Adjustment data varies according to the unit.)

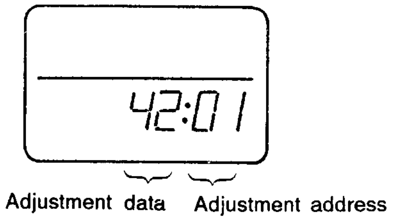


Fig. 7-7.

4) Designate the desired adjustment address using the adjustment remote commander. The adjustment address is incremented by pressing the FF (⏩) button and decremented by pressing the REW (⏪) button. (The adjustment address is indicated in decimal, and there are 89 addresses from 01 to 89. The adjustment address corresponds to the EVR (CV-9 board, IC608, IC609, IC804) output terminals. Refer to Table 7-3. for the adjustment contents of the various addresses.)

5) Perform adjustment by incrementing or decrementing the adjustment data.
The adjustment data is incremented by pressing the PLAY (►) button. The adjustment data is decremented by pressing the STOP (■) button.
- The adjustment data is indicated in hexadecimal. There are 256 values from 00 to FF.

Hexadecimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Indication on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal equivalent	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

- The adjustment data corresponds to the EVR (CV-9 board, IC608, IC609, IC804) output voltage, and is as follows.

Adjustment data ( ) is decimal equivalent	EVR output voltage
FF (=255)	Maximum value (approx. 5 Vdc)
↑ F0 (=240)	↑
E0 (=224)	
D0 (=208)	
C0 (=192)	
B0 (=176)	
A0 (=160)	
90 (=144)	
80 (=128)	Center value (approx. 2.5 Vdc)
70 (=112)	
60 (=96)	
50 (=80)	
40 (=64)	
30 (=48)	
20 (=32)	
↓ 10 (=16)	↓
00 (=0)	Minimum value (approx. 0 Vdc)

Table 7-2.

6) The adjustment address is changed using the FF (►►) button or REW (◄◄) button to store the adjustment data in the nonvolatile memory of EVR/AWB microcomputer (IC601 on CV-9 board).
(The new adjustment data is not stored in the nonvolatile memory unless this operation is performed.)

2. Precautions on use of adjustment remote commander

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote commander. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

3. Adjustment address table

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Adjustment Data Memo Column
01	Pin ⑱ of IC609	DELTA R	Auto white balance adjustment	
02	Pin ⑲ of IC609	DELTA B		
03	Pin ② of IC609	TITLE PEDESTAL		
04	Pin ③ of IC609	C-PED	Fixed at "99"	99
05	Pin ④ of IC609	R-Y GAIN	Color reproduction (gain) adjustment	
06	Pin ⑤ of IC609	B-Y GAIN		
07	Pin ⑥ of IC609	R-Y HUE	Color reproduction (hue) adjustment	
08	Pin ⑦ of IC609	B-Y HUE		
09	Pin ⑧ of IC609	C LEVEL		
10	Pin ⑨ of IC609	Y GAIN		
11	Pin ⑫ of IC609	R GAIN	Pre-white balance adjustment	
12	Pin ⑬ of IC609	B GAIN		
13	Pin ⑱ of IC608	C2 GAIN	Chroma matrix adjustment	
14	Pin ⑲ of IC608	C1 GAIN		
15	Pin ② of IC608	Y1 GAIN	Y matrix adjustment	
16	Pin ③ of IC608	HUE CONT	Burst phase adjustment	
17	Pin ④ of IC608	WC	White clip adjustment	
18	Pin ⑤ of IC608	Y LEVEL		
19	Pin ⑥ of IC608	SET UP		
20	Pin ⑦ of IC608	SYNC LEVEL		
21	Pin ⑧ of IC608	APERTURE	Aperture adjustment	
22	Pin ⑨ of IC608	BURST LEVEL		
23		———		–
24	Pin ⑬ of IC608	CHARACTOR		
25	Pin ⑱ of IC804	IRIS		
26	Pin ⑲ of IC804	FOCUS SPEED		
27	Pin ② of IC804	HALL OFFSET		
28	Pin ③ of IC804	MAX GAIN		
29	Pin ④ of IC804	TITLE A/D		
30		———		–
31	Pin ⑥ of IC804	V SUB		
32	Pin ⑦ of IC804	AGC		
33		———		–
34		———		–
35		———		–
36		———		–

Table 7-3. (1)

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Adjustment Data Memo Column
37		MODE	The following adjustment modes are selected by changing the adjustment data. Adjustment data / Adjustment mode 00 Release 01 Focus hunching 03 Zoom position 05 Hall, iris close 07 Hall, iris open 09 Hall in/out threshold 0B Auto-focus LLA FD Auto-focus filter fixed at FA FF Auto-focus filter fixed at FH	00
38		LLA	Auto-focus LLA adjustment	
39		MACRO		
40		IN/OUT DOOR	Fixed at 00	00
41		LOW CONT	Fixed at 03	03
42		BASE H	Auto-focus adjustment	
43		PLUS	Fixed at 00	00
44		STEP	Fixed at 00	00
45		Hysteresis		
46		HALL LEVEL		
47		HANT LIMIT	Fixed at 00	00
48		FA BASE	Fixed at 28	28
49		KATAMUKI	Auto-focus adjustment	
50		TOPCHECK-THR	Fixed at 00	00
51		BACK RUSH	Fixed at 02	02
52		TOP CHECK SEARCH	Fixed at 01	01
53		TOP LIMIT	Fixed at 03	03
54 to 58		————	Not used	–
59		START R	Preset R CONT data for reset start	30
60		START B	Preset B CONT data for reset start	41
61		BTM SLP R	Fixed at 22	22
62		BTM SLP B	Fixed at 10	10
63		MDL SLP R	Auto white balance adjustment	
64		MDL SLP B	Fixed at 00	00
65		TOP SLP R	Auto white balance adjustment	
66		TOP SLP B		
67		KEIKO R	Fixed at 10	10
68		KEIKO B	Fixed at 00	00
69		BTM UP	Fixed at 89	89
70		BTM DWN	Fixed at 61	61
71		MDL UP	Fixed at 7C	7C
72		MDL DWN	Fixed at 6A	6A
73		TOP UP	Auto white balance adjustment	
74		TOP DWN		

Table 7-3. (2)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>75</td><td></td><td>KEIKO DWN</td><td>Fixed at 8C</td><td>8C</td></tr>
<tr><td>76</td><td></td><td>R DWN LMT</td><td>Fixed at 1E</td><td>1E</td></tr>
<tr><td>77</td><td></td><td>B UP LMT</td><td rowspan="5">Auto white balance adjustment</td><td></td></tr>
<tr><td>78</td><td></td><td>R OUT LMT</td><td></td></tr>
<tr><td>79</td><td></td><td>B OUT LMT</td><td></td></tr>
<tr><td>80</td><td></td><td>R OUTDOOR</td><td></td></tr>
<tr><td>81</td><td></td><td>B OUTDOOR</td><td></td></tr>
<tr><td>82</td><td></td><td>BM DIVID</td><td>Fixed at 23</td><td>23</td></tr>
<tr><td>83</td><td></td><td>DELAY TM</td><td>Auto white balance tracking speed. Fixed at 15</td><td>15</td></tr>
<tr><td>84</td><td></td><td>FAST TM</td><td>Fixed at 20</td><td>20</td></tr>
<tr><td>85</td><td></td><td>CAM DDS 0</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>86</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>87</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>88</td><td></td><td>CAM ALN</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>89</td><td></td><td>AWB mode</td><td>The following auto white balance adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>10</td><td>White balance value output (within tracking zone)</td></tr>
<tr><td>E0</td><td>Auto white balance adjustment possible</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone evaluation invalid</td></tr>
</table></td><td>00</td></tr>
</table>

Table 7-3. (3)

7-1-5. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the CV-9 board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.

The terminal numbers and signal names for the check point array are shown in Table 7-4.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	G OUT	B1	R-Y
A2	N.C	B2	B-Y
A3	N.C	B3	Y(LPF)OUT
A4	Y0	B4	V SUB
A5	Y1	B5	AW ADJ
A6	C0	B6	$\overline{\text{CAM ADJ}}$
A7	C1	B7	MODE
A8	N.C	B8	VIDEO OUT
A9	YH	B9	SHUTTER EN
A10	C-OUT	B10	GND
A11	N.C	B11	CCD OUT

Table 7-4.

* N.C......no connection

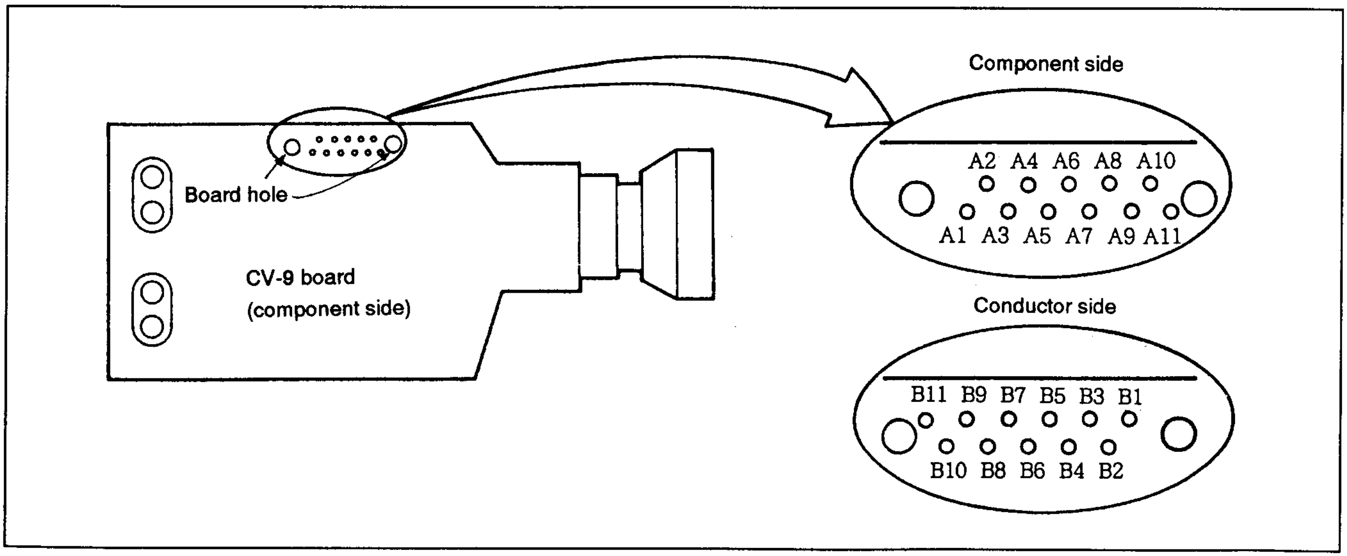

Component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Board hole
CV-9 board
(component side)
Conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 7-8.

7-1-6. AF Microcomputer Data Reading Jig

The AF microcomputer data reading jig converts the serial data (output data varies according to hall (iris) state, focus state, focus motor speed, zoom ring position, etc.) for adjustment output from the AF microcomputer (IC802 on CV-9 board) into a 2-digit hexadecimal code and displays it on the LED.

Connections:
Connect as shown in the diagram below.

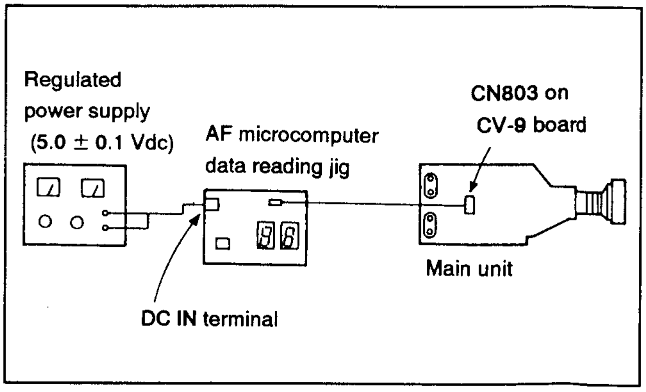

Regulated
power supply
(5.0 ± 0.1 Vdc)
AF microcomputer
data reading jig
CN803 on
CV-9 board
Main unit
DC IN terminal

Fig. 7-9.

7-1-7. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microcomputer data reading jig and adjustment remote commander is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal-decimal conversion table is shown in Table 7-5.

Hexadecimal-Decimal Conversion Table

Hexadecimal lower digit Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) is the indication on the jig or adjustment remote commander.

Example: The indication on the jig or adjustment remote commander is BD (b d).
As the upper digit is B (b) and the lower digit is D (d), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 7-5.

7-2. CAMERA SYSTEM ADJUSTMENT

7-2-1. Flange Back Adjustment

Subject	Siemens star (2m directly in front of lens reference ("⌽" marked)
Measurement Point	Check with a monitor TV
Measuring Instrument	
Adjustment Element	Flange back adjusting pin
Tools	Phillips screwdriver, flat blade (–) screwdriver

Adjustment method:

1) Press the FOCUS switch (S655 on DK-2P board) to set to the MANUAL mode.
2) Position a Siemens star 2m directly in front of the lens reference plane (See Fig. 7-2.).
3) Orient the camera block to have the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the lens zoom lever to both its extreme WIDE position (9 mm) and TELE position (54 mm), and then set it at the extreme WIDE position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of 07. (Iris open mode)
   At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focusing mark at the center of "2".

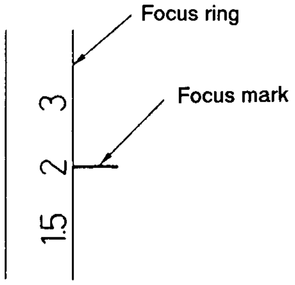


Fig. 7-10.

7) Loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 7-12.)
8) By turning the flange back adjusting pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few turns to the left and right to ensure optimum definition.)
   Note: Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting pin ❷ to prevent further rotation, retighten the flange back setscrew ❶.
10) With the zoom lever fixed at its WIDE end, turn the focusing ring and set it to the position that provides the optimum definition image of the wedge. Check to assure the focusing mark position is within the range shown in Fig. 7-11. Also, rotate the focusing ring to the close (1.1m) and far (∞) extremes and confirm that the wedge is no longer in focus.

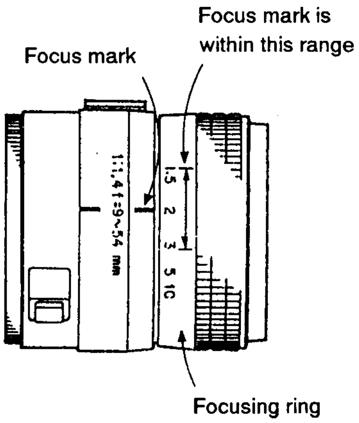


Fig. 7-11.

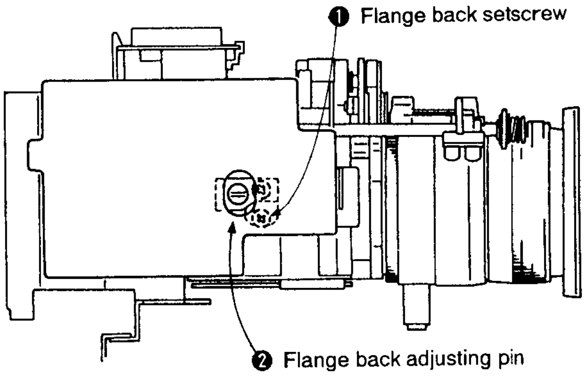


Fig. 7-12.

11) Fix the zoom lever at the extreme TELE position.
12) Turn the focusing ring and stop at the position where the wedge has optimum definition.
    Confirm that the focus mark is within ± 1.5 mm of "2".
13) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of 00. (Iris normal)
14) Change the adjustment address to store the adjustment data in the memory.

7-2-2. 15V Power Supply Adjustment (PS-180P Board)

Measurement Point	Pin ② of W902
Measuring Instrument	Digital voltmeter
Adjustment Element	RV937
Specified Value	15.0 ± 0.5 Vdc

Adjustment method:
1) Adjust to 15.0 ± 0.5 Vdc with RV937.

7-2-3. Power Supply Check (PS-180P Board)

Measuring Instrument	Digital voltmeter
CAM 5V Check	
Measurment Point	Pin ④ of W902
Specified Value	5.1 ± 0.15 Vdc
32V Check	
Measurement Point	Pin ① of W902
Specified Value	32 ± 2 Vdc

Checking method:
1) Each power supply voltage should be at its specified level.

7-2-4. EVR Initial Settings

Set to the following initial settings of the adjustment data only when the EVR/AWB microcomputer (IC602 on CV-9 board) was replaced.

Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value
01 (DELTA R)	50	43 (PLUS)	00	68 (KEIKO B)	00
02 (DELTA B)	50	44 (STEP)	00	69 (BTM UP)	89
04 (C-PED)	99	47 (HANT LIMIT)	00	70 (BTM DWN)	61
17 (WHITE CLIP)	FF	48 (FA BASE)	28	71 (MDL UP)	7C
18 (Y LEVEL)	40	50 (TOP CHECK-THR)	00	72 (MDL DWN)	6A
25 (IRIS)	80	51 (BACK RUSH)	02	75 (KEIKO DWN)	8C
28 (MAX GAIN)	B0	52 (TOP CHECK-SEARCH)	01	76 (R DWN LMT)	1E
31 (V SUB)	80	53 (TOP LIMIT)	03	82 (BM DIVID)	23
32 (AGC)	FF	59 (START R)	30	83 (D TM)	10
37 (MODE)	00	60 (START B)	41	84 (F TM)	20
38 (LLA)	3F	61 (BTM SLP R)	22	85 (CAM DDS O)	00
39 (MACRO)	00	62 (BTM SLP B)	10	86	00
40 (IN/OUT DOOR)	00	63 (MDL SLP R)	00	87	00
41 (LOW CONT)	03	64 (MDL SLP B)	00	88 (CAM ALN)	00
42 (BASE H)	03	67 (KEIKO R)	10	89 (AWB MODE)	00

Table 7-6.

Adjustment method:
1) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote commander.
2) Change the adjustment address to store the last adjustment data in the memory.

7-2-5. PLL Adjustment (CV-9 Board)

Measurement Point	Pin ⑳ of IC604
Measuring Instrument	Digital voltmeter
Adjustment Element	CT601
Specified Value	2.5 ± 0.2 Vdc

Adjustment method:

1) Adjust to 2.5 ± 0.2 Vdc with CT601.

7-2-6. V SUB Adjustment (CV-9 Board)

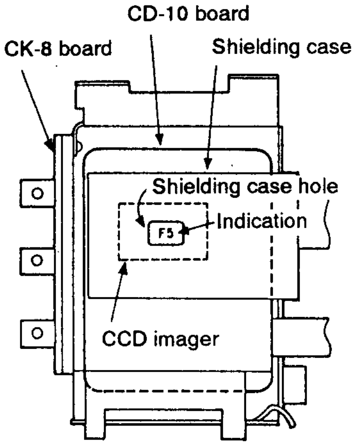
Subject	Not needed
Measurement Point	Pin (B4) (V SUB) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Address	31 (V SUB)
Specified Value	(Voltage indicated by the imager) ± 0.05 Vdc

Adjustment method:

1) Set the adjustment address to 31 using the adjustment remote commander.
2) Change the adjustment data using the adjustment remote commander to set the VSUB voltage to (Voltage indicated by the imager) ± 0.05 Vdc.
3) Change the adjustment address to store the adjustment data in the memory.

Note: The VSUB specified voltage is expressed by two digits with the integer section abbreviation and decimal section by the imager.

Integer section abbreviation	Integer value
1	1
⋮	⋮
9	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21



(Example)
If F5 is indicated, the integer value is F → 15 and decimal value is 5 → 0.5. Thus, the VSUB voltage is 15 + 0.5 = 15.5 (Vdc).

Fig. 7-13.

7-2-7. Hall Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Signal	CN803
Measurement Point	AF microcomputer data reading jig
Measuring Instrument	RV801
Adjusment Address	27 (Hall Offset)
Specified Value	When iris closed: Minimum value of 01 to 04 When iris open: 3D or 3E

Adjustment method:

1) Set the adjustment address to 37 with the adjustment remote commander, and set the adjustment data to 05. (Setting when iris closed)
2) Change the adjustment address to 27.
3) Change the adjustment data until the indication on the AF microcomputer data reading jig is the minimum value in the range of 01 to 04. (Hall offset adjustment)
4) Change the adjustment address to 37 and set the adjustment data to 07. (Setting when iris open)
5) Adjust RV801 until the indication on the AF microcomputer data reading jig is either 3D or 3E. (3D is indicated as 3d.)
6) Repeat steps 1) through 5) until the specified values are satisfied.
7) Set the adjustment address to 37 and set the adjustment data to 00. (Releases adjustment mode)
8) Change the adjustment address to store the adjustment data in the memory.

7-2-8. Iris Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement Point	Pin(B11) (CCD OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	25 (Iris)
Specified Value	360 ± 20 mVp-p

Adjustment method:

1) Set the adjustment address to 25 with the adjustment remote commander.
2) Without attaching an ND filter, change the adjustment data with the adjustment remote commander to set the IRIS OUT signal level to 360 ± 20 mVp-p.
3) Attach the ND filter 0.5 (0.4 ± 0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
4) Remove the ND filter and confirm that the signal level is 360 ± 20 mVp-p.
5) Repeat 2) through 4) if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

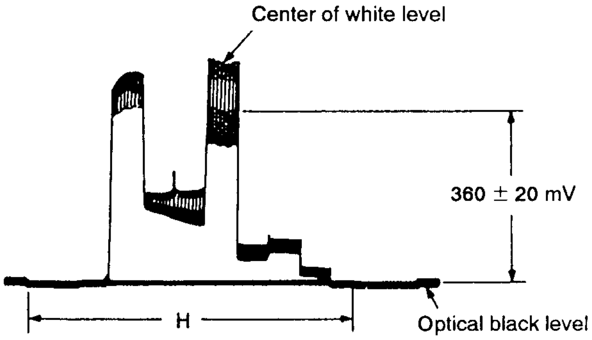


Fig. 7-14.

7-2-9. Iris In/Out Adjustment (CV-9 Board)

Subject	White pattern standard picture frame
Filter	ND filter 0.4 (two) and 0.1 (one)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	46 (hall level) 45 (hysteresis)

Adjustment method:

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Set the adjustment address to 37 with the adjustment remote commander and set the adjustment data to 09. (Hall in/out threshold mode setting)
3) Read the data indicated on the AF microcomputer data reading jig. This data will be a.
4) Change the adjustment address to 46 and enter a as the adjustment data.
5) Remove the ND filter 0.8 and replace it with ND filter 0.5 (0.4+0.1).
6) Read the data indicated on the AF microcomputer data reading jig. This data will be b.
7) Subtract data b from data a to obtain data c.
   (Refer to Table 7-5. Hexadecimal-Decimal Conversion Table)
   (Example)
   If a=1A and b=15, c=a–b =1A(26) – 15(21) =05
   ( ) indicates decimal value
8) Obtain the hysteresis data from data c using the table below.

Data c	Hysteresis Data
02, 03	01
04, 05, 06	02
07, 08, 09	03

   (Example)
   The hysteresis data is 02 if c=05.
9) Change the adjustment address to 45 and enter the hysteresis data as the adjustment data.
10) Change the adjustment address to 37 and set the adjustment data to 00.
    (Releases hall in/out threshold mode)
11) Change the adjustment address to store the adjustment data in the memory.

7-2-10. AGC Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B3) (Y (LPF) OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	32 (AGC)
Specified Value	160 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 32 using the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the Y (LPF) signal level to 160 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

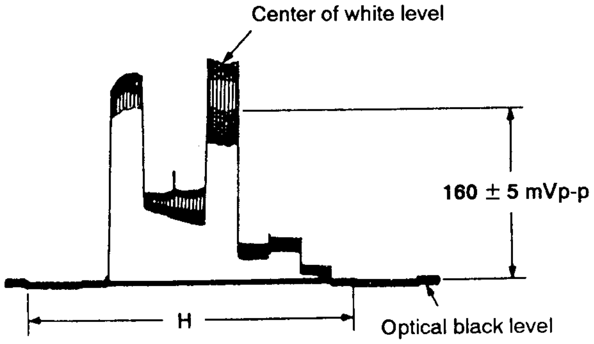


Fig. 7-15.

7-2-11. Y Signal Matrix Adjustment (CV-9 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin (A4) (Y0) of check point array 2: Pin (A5) (Y1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	15 (Y1 GAIN)
Specified Value	Y1 signal level=Y0 signal level

Adjustment method:

1) Connect the oscilloscope to Pin (A4) of the check point array and measure the Y0 signal level.
2) Connect the oscilloscope to Pin (A5) of the check point array.
3) Set the adjustment address to 15 using the adjustment remote commander.
4) Change the adjustment data until the Y1 signal level is the same as the Y0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

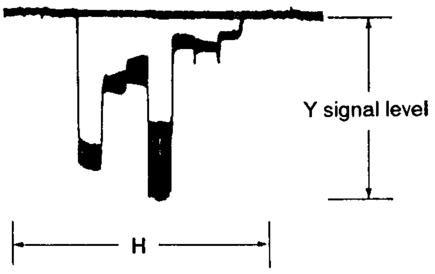


Fig. 7-16.

7-2-12. Chroma Signal Matrix Adjustment (1) (CV-9 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin A6 (C0) of check point array 2: Pin A7 (C1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	14 (C1 GAIN)
Specified Value	C1 signal level=C0 signal level

Adjustment method:

1) Connect the oscilloscope to Pin A6 of the check point array and measure the C0 signal level. (The C0 signal level is the larger of the CR and CB signal levels.)
2) Connect the oscilloscope to Pin A7 of the check point array.
3) Set the adjustment address to 14 using the adjustment remote commander.
4) Change the adjustment data until the C1 signal level is the same as the C0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

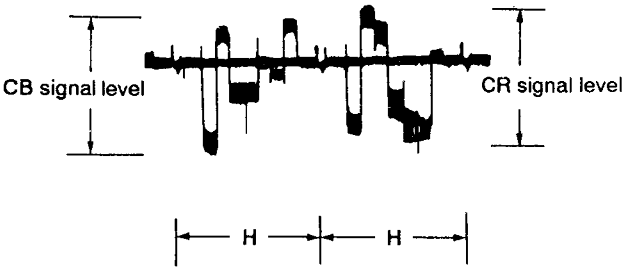


Fig. 7-17. C0 and C1 Signal Levels

7-2-13. Chroma Signal Matrix Adjustment (2) (CV-9 Board)

Subject	Color bar standard picture frame
Measurement Point	CH1 (X): Pin B2 (B-Y) of check point array or collector of Q643 CH2 (Y): Pin B1 (R-Y) of check point array or collector of Q613
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	13 (C2 GAIN)
Specified Value	Separate color luminance points become one.

Note: Adjustment can be made in the same manner using a vectorscope.
(Vectorscope connection terminal: video output terminal)

Adjustment method:

1) Set the adjustment address to 13 using the adjustment remote commander.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

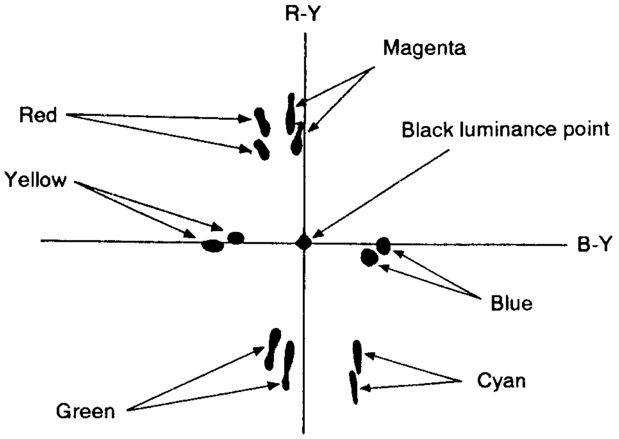


Fig. 7-18.

7-2-14. YH Level Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin(A9) (YH) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	10 (Y GAIN)
Specified Value	900 ± 40 mVp-p

Adjustment method:

1) Set the adjustment address to 10 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the YH signal level to 900 ± 40 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

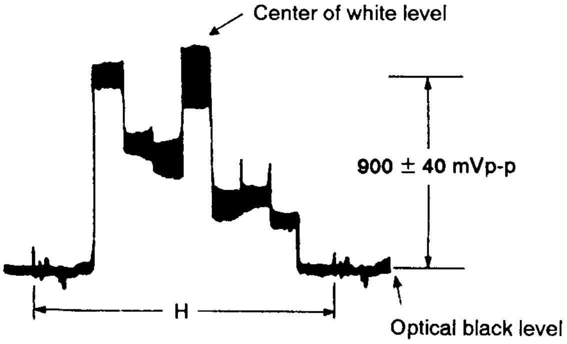


Fig. 7-19.

7-2-15. Sync Level Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	20 (SYNC LEVEL)
Specified Value	150 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 20 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the sync level to 150 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

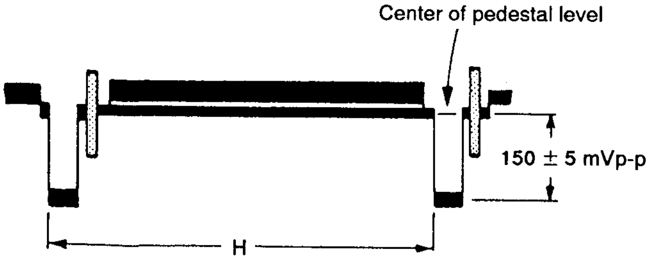


Fig. 7-20.

7-2-16. Setup Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	19 (SET UP)
Specified Value	15 ± 5 mV

Note: 1) and 2) are steps taken to reduce noise.

Adjustment method:

1) Set the address to 21 (APERTURE) with the adjustment remote commander, and enter 00 as the adjustment data after making a note of the adjustment data for this at address.
2) Set the address to 28 (MAX GAIN) with the adjustment remote commander, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Set the adjustment address to 19 with the adjustment remote commander.
4) Change the adjustment data with the adjustment remote commander to set the setup level to 15 ± 5 mV.
5) Set the adjustment address to 21 and enter the adjustment data recorded in 1).
6) Set the adjustment address to 28 and enter the adjustment data recorded in 2).
7) Change the adjustment address to store the adjustment data in the memory.

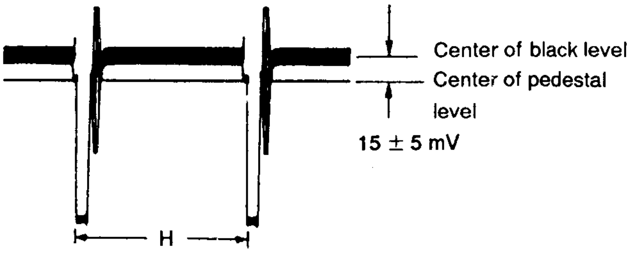


Fig. 7-21.

7-2-17. Y Level Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	18 (Y LEVEL)
Specified Value	315 ± 10 mV

Adjustment method:

1) Set the adjustment address to 17 with the adjustment remote commander, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote commander.
3) Set the adjustment address to 18 with the adjustment remote commander.
4) Change the adjustment data with the adjustment remote commander to set the Y signal level to 315 ± 10 mV.
5) Set the adjustment address to 17 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

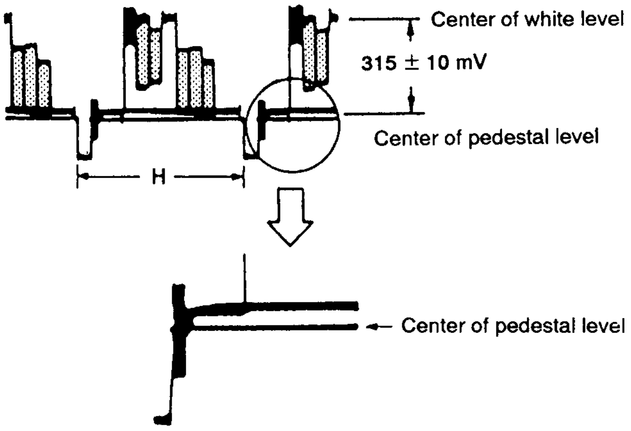

Center of white level
315 ± 10 mV
Center of pedestal level
H
Center of pedestal level

Fig. 7-22.

7-2-18. White Clip Adjustment (CV-9 Board)

Subject	High luminance pattern
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	17 (WHITE CLIP)
Specified Value	420 ± 10 mV

Adjustment method:

1) Set the adjustment address to 17 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the white clip level to 420 ± 10 mV.
3) Change the adjustment address to store the adjustment data in the memory.

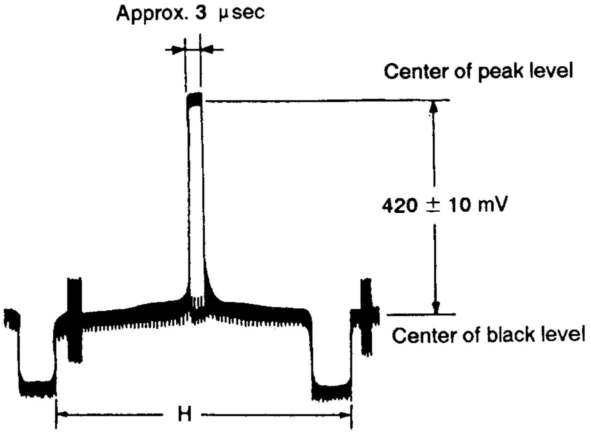

Approx. 3 μsec
Center of peak level
420 ± 10 mV
Center of black level
H

Fig. 7-23.

7-2-19. Aperture Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	21 (APERTURE)
Specified Value	90 ± 10 mV

Adjustment method:

1) Set the adjustment address 05 (R-Y GAIN) with the adjustment remote commander, and make a note of the adjustment data at this address.
2) Set the adjustment data to 00 with the adjustment remote commander. (Reduces the amplitude of the chroma signal.)
3) Set the adjustment address to 21.
4) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
5) Change the adjustment data to set the lower peak between green and white to 90 ± 10 mV above the pedestal level.
6) Set the adjustment address to 05 and enter the adjustment data as the value recorded in 1).
7) Change the adjustment address to store the adjustment data in the memory.

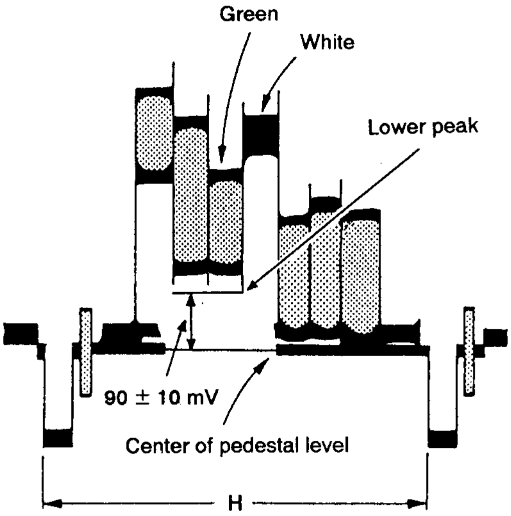


Fig. 7-24.

7-2-20. Max. Gain Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (two) and 0.4 (one)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	28 (MAX GAIN)
Specified Value	160 ± 10 mV

Adjustment method:

1) Cover the lens with the ND filter 2.4 (1.0 + 1.0 + 0.4).
2) Set the adjustment address to 28 with the adjustment remote commander.
3) Change the adjustment data with the adjustment remote commander to set the Y signal level to 160 ± 10 mV.
4) Change the adjustment address to store the adjustment data in the memory.

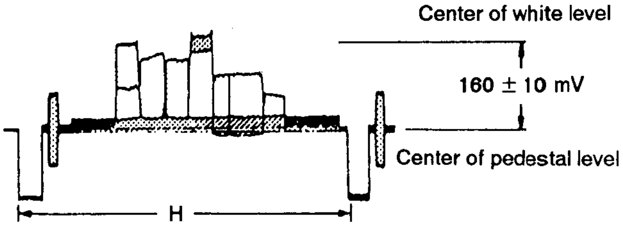


Fig. 7-25.

7-2-21. Chroma Level Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin A1 (G OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	09 (C LEVEL)
Specified Value	320 ± 20 mVp-p

Connections:

1) Connect Pin B7 (MODE) of the check point array to GND using a jumper wire.

Adjustment method:

1) Set the adjustment address to 09 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the G OUT signal level to 320 ± 20 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

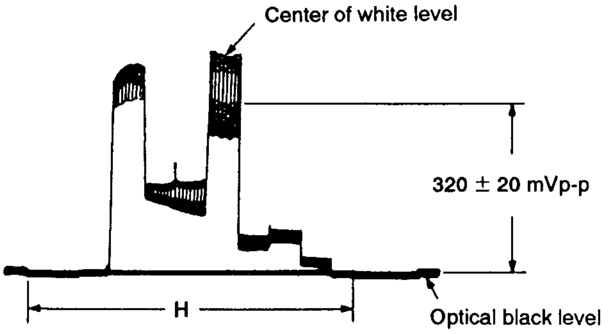


Fig. 7-26.

7-2-22. Indoor White Balance Adjustment (Method using vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminals
Measuring Instrument	Vectorscope
Adjustment Address	11 (R GAIN) 12 (B GAIN)
Specified Value	The white luminance point is within a circle with a diameter of 1 mm centered around the origin.

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to move the white luminance point to the origin point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the origin point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

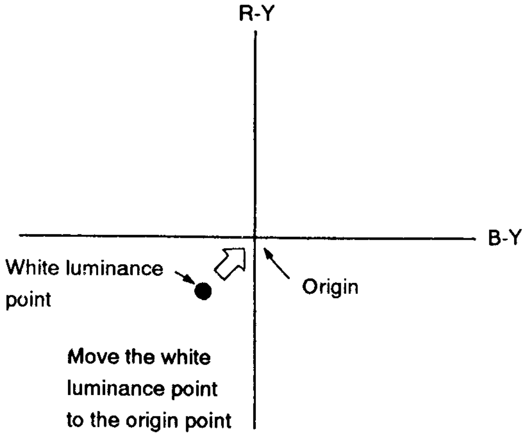


Fig. 7-27.

7-2-23. Indoor White Balance Adjustment (Method Using Oscilloscope) (CV-9 Board)

Subject	Color bar standard picture frame
Measurement Point	CH1 (X): Pin Ⓑ2 (B-Y) of check point array or collector of Q643 CH2 (Y): Pin Ⓑ1 (R-Y) of check point array or collector of Q613
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	11 (R GAIN) 12 (B GAIN)
Specified Value	Move the white luminance point to the black luminance point.

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to move the white luminance point with the black luminance point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the black luminance point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

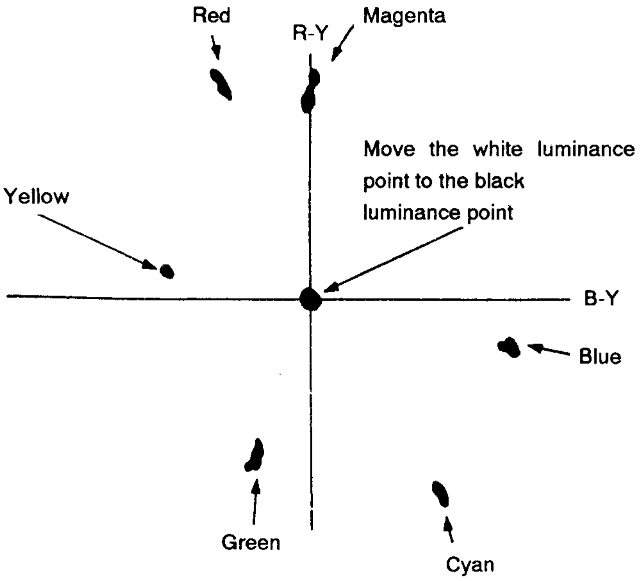


Fig. 7-28.

7-2-24. Burst Phase Adjustment (Method Using Vectorscope)

Subject	All black (cover lens with black cap)
Measurement Point	Video output terminals
Measuring Instrument	Vectrscope
Adjustment Address	16 (HUE CONT)
Specified Value	135° ± 1°

Adjustment method:

1) Set adjustment address to 16 with the adjustment remote commander.
2) Change adjustment data so as to set the burst luminance point in the 135° ± 1° position.
3) Change the adjustment address to store the adjustment data in the memory.
4) Perform Burst Level Adjustment.

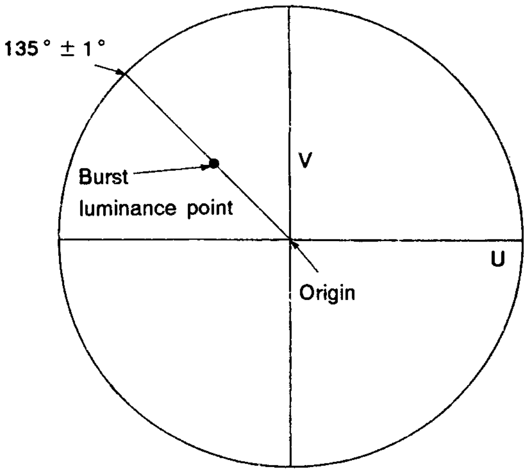


Fig. 7-29.

7-2-25. Burst Phase Adjustment (CV-9 Board) (Mothod Using Oscilloscope)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope (Trigger slope:+)
Adjustment Address	16 (HUE CONT)
Specified Value	Burst phase should become a single line.

Adjusing method:

1) Set adjustment address to 16 with the adjustment remote commander.
2) Change the adjustment data so as to turn the burst waveform into a single line.
3) Change the adjustment address to store the adjustment data in the memory.
4) Perform Burst Level Adjustment.

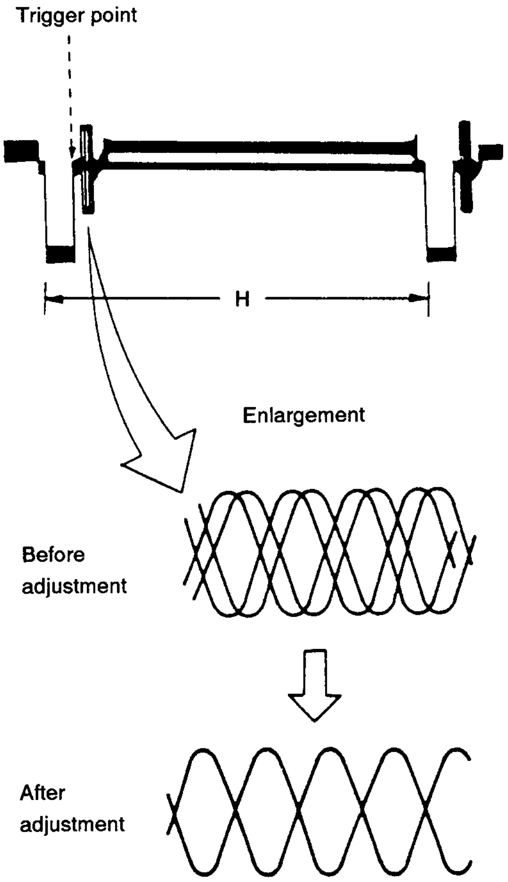


Fig. 7-30.

7-2-26. Burst Level Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	22 (BURST LEVEL)
Specified Value	150 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 22 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the burst level to 150 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

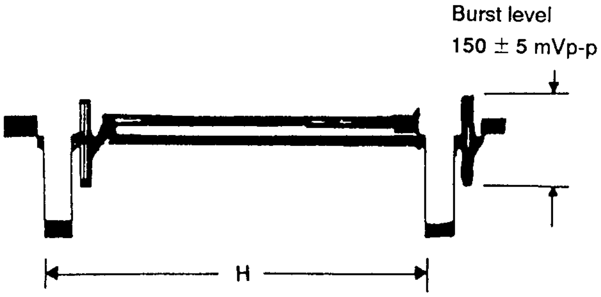


Fig. 7-31.

Illumination Adjustment:

1) Select adjustment address 37 and input adjustment data 09 with the adjustment remote commander (this will cause iris condition to be displayed on the AF microcomputer data reading jig (henceforth referred to as AF jig)).
2) Put a black cap on the lens and read the AF jig indication (value for fully-open iris).
3) Remove the black cap and confirm that the AF jig indication drops below the fully-open value (in case the iris remains fully open, increase Siemens Star illumination).
4) Lower Siemens Star illumination gradually (if using ND filters, gradually increase the ND value). Stop when the AF jig indication reaches the fully-open iris value-2 from the fully-open iris value. (Confirm that the screen does not get dark.)

Auto-focus Adjustment:

1) Set the focus ring to the close-range end (1.1m) and the zoom lever to the TELE end (54 mm), then turn auto-focus on with the FOCUS button.
2) After 2.0 seconds, confirm that the Siemens Star is being clearly reproduced, then press the FOCUS button to turn auto-focus off.
3) Select adjustment address 37 and input adjustment data FF with the adjustment remote commander (the auto-focus filter will be set to the FH side).
4) Read the AF jig indication, and call the data D, and then convert it to the decimal number D'. Then obtain FHSM' by the following formula:
   FHSM'=D'/2.5
   (FHSM' shall be within 16 to 55)
5) Select adjustment address 37 and input adjustment data FD with the adjustment remote commander (the auto-focus will be set to the FA side).
6) Read the AF jig indication, and call the data D, and then convert it to the decimal number D'. Then obtain FASM' by the following formula:
   FASM'=D'/1.6
   (FASM' shall be within 78 to 104)
7) Obtain D49' by the following formula:

$$D49' = \frac{FHSM' - FHB - 4}{FASM' - 40} \times 16$$

   - FH-B is the adjustment data for the all-black pattern.
8) Convert D49' to the hexadecimal number D49 (Round off the decimal portion. D49 shall be within 03 to 0D).
9) Select adjustment address 49 and input adjustment data D49.
10) Select adjustment address 37 and input adjustment data 00.

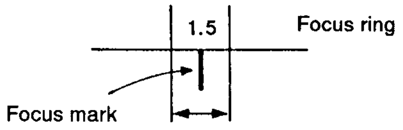
7-2-35. Auto-Focus Confirmation

Subject	Siemens star (position 1.5m from the front of the lens reference plane ("Φ" mark)

Note: Perform adjustment with the EVF (electronic viewfinder) attached.

Measuring method:

1) Place the Siemens star 1.5m from the front of the lens reference surface (See Fig. 7-2.).
2) Set the zoom lever to the TELE position (54 mm) and turn on auto focus with the FOCUS button.
3) Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris, reduce the illumination of the Siemens star to the range in which the ■ mark in the upper center of the EVF screen does not light up.
   (Or cover lens with the ND filter)
5) Turn off the auto-focus with the FOCUS button.
6) Manually rotate the focus ring to set the focus. Confirm that the focus mark is inside the range shown in Fig. 7-38 at this time.
   Perform Flange Back Adjustment if this condition is not satisfied.
7) Rotate the focus ring to the close extreme (1.1m).
8) Turn on the auto-focus with the FOCUS button.
9) Confirm that there is focusing within two seconds and a sharp image can be obtained.
10) Turn off the auto-focus and rotate the focus to the far extreme (∞).
11) Turn on the auto-focus.
12) Confirm that there is focusing within two seconds and a sharp image can be obtained.



Confirm that focus mark is within this range

Fig. 7-38.

7-3. DIGITAL TITLER SYSTEM ADJUSTMENT

7-3-1. Titler PLL Adjustment (LI-10 Board)

Subject	Arbitrary
Measurement Point	C910 (see Fig. 7-39.)
Measuring Instrument	Digital voltmeter
Adjustment Address	CV901
Specified Value	2.5 ± 0.1 Vdc

Note: Remove the three boards LI-10, CK-8P and DK-2P together with their mounting frame before adjustment.

Connection:

1) Connect Pin ⑧ (SS5V) of IC901 to the check land (Pin (64) of IC902) with a jumper wire (see Fig. 7-40.).

- Measurement point

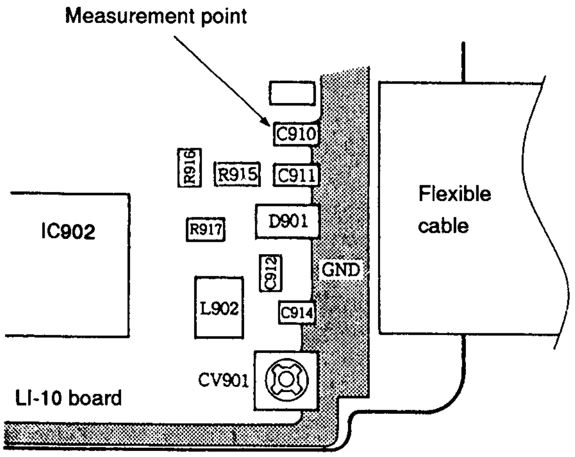
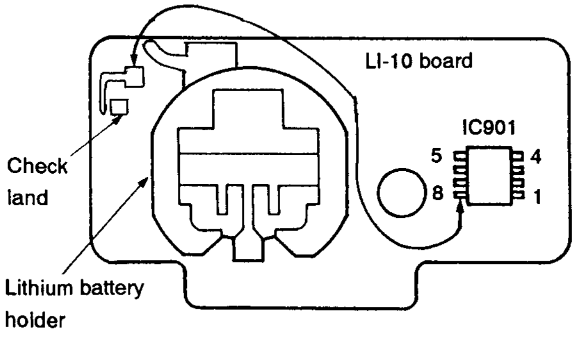

Measurement point
C910
R916
R915
C911
IC902
R917
D901
C912
GND
L902
C914
CV901
LI-10 board
Flexible cable

Fig. 7-39.

- Connection for test mode setting


LI-10 board
IC901
5
4
8
1
Check land
Lithium battery holder

Connect Pin ⑧ (SS5V) of IC901 to the check land (Pin (64) of IC902) with a jumper wire.

Fig. 7-40.

Adjustment method:

1) Set to 2.5 ± 0.1 Vdc with CV901.

7-3-2. Title A/D Level Adjustment (LI-10 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Check on the monitor screen
Measuring Instrument	
Adjustment Address	29 (TITLE A/D)
Specified Value	All areas except yellow, cyan, green and white sections must be superimposed (get white).

Note: Perform Y-level adjustment first.

Adjustment method:

1) Set adjustment address 29 with the adjustment remote commander.
2) Press the MEMORY button (S657 on the CK-8P board).
3) Confirm that all areas except yellow, cyan, green and white sections get white.
4) In case the condition in step 3 is not achieved, change adjustment data with the adjustment remote commander and repeat steps 2) and 3).
5) Change the adjustment address to store the adjustment data in the memory.

Shaded areas must get white

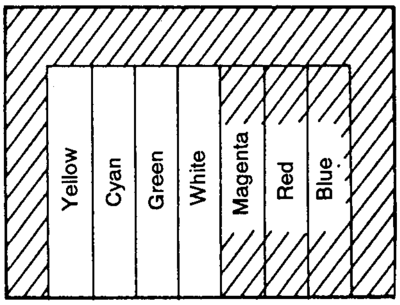

Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. 7-41.

7-2-27. Color Reproduction Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminals
Measuring Instrument	Vectorscope
Adjustment Address	05 (R-Y GAIN) 06 (B-Y GAIN) 07 (B-Y HUE) 08 (R-Y HUE)
Specified Value	All color luminance points are within color reproduction frame.

Note: Confirm that Burst Phase Adjustment, Burst Level Adjustment and Indoor White Balance Adjustment have been completed.

Adjustment method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Change the adjustment data at the various adjustment addresses using the adjustment remote commander until all color luminance points are within the color reproduction frame.
3) Change the adjustment address to store the adjustment data in the memory.

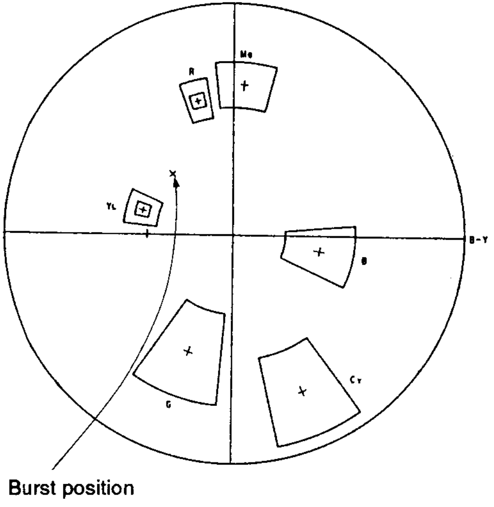


Fig. 7-32.

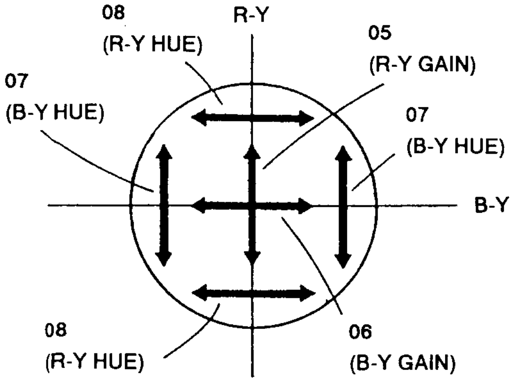


Fig. 7-33. Adjustment Address and Direction of Luminance Point Movement

7-2-28. Color Reproduction Adjustment (Method Using Oscilloscope)

1. Gain adjustment (CV-9 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	05 (R-Y GAIN) 06 (B-Y GAIN)
Specified Value	Red level: 244 ± 15 mVp-p Yellow level: 180 ± 11 mVp-p

Note: Confirm that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Set the adjustment address to 06 with the adjustment remote commander and set the adjustment data to B0.
2) Set the adjustment address to 07 and set the adjustment data to B0.
3) Set the adjustment address to 08 and set the adjustment data to B0.
4) Set the adjustment address to 05 and change the adjustment data to set the chroma signal red level to 244 ± 15 mVp-p.
5) Set the adjustment address to 06 and change the adjustment data to set the chroma signal yellow level to 180 ± 11 mVp-p.
6) Repeat steps 4) and 5).
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform Hue Adjustment.

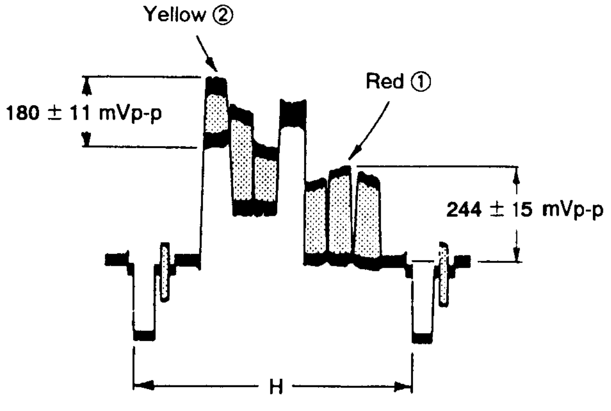


Fig. 7-34.

2. Hue adjustment

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): Pin (B2) (B-Y) of check point array or collector of Q643 CH2 (Y): Pin (B1) (R-Y) of check point array or collector of Q613
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	07 (B-Y HUE) 08 (R-Y HUE)
Specified Value	Various color luminance points within color reproduction frame.

Note: Make sure that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Move the black luminance point on the oscilloscope to the origin point of the color reproduction frame.
2) Change the adjustment data at adjustment addresses 07 and 08 with the adjustment remote commander to bring the various color luminance points into the color reproduction frame.
3) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 07 and 08 if necessary.
4) Change the adjustment address to store the adjustment data in the memory.

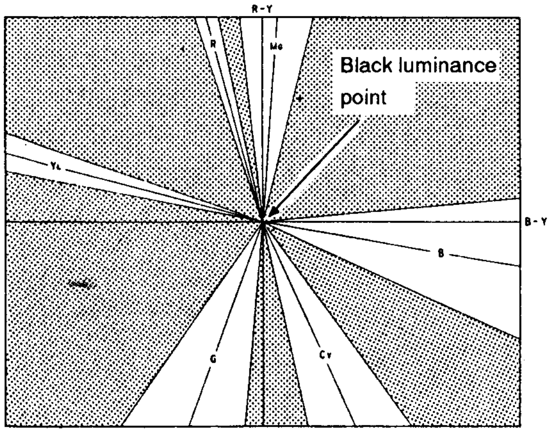


Fig. 7-35.

7-2-29. Auto White Balance Adjustment

Note: Be sure to first perform Preset Adjustment followed by Auto White Balance Adjustment.

1. Preset adjustment (CV-9 board)

Subject	1. Color bar standard picture frame 2. White pattern standard picture frame
Measurement Point	Pin (B3) (Y LPF OUT) of check point array
Measuring Instrument	Oscilloscope

Note: 1) Perform preset adjustment after supplying power to the unit for at least 30 seconds.
2) When performing preset adjustment again, repeat after first turning the power off and then back on.

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (B5) (AWB ADJ) of the check point array and Pin ④ (CAM 5V) of W902.

Adjustment method:

1) Turn the power OFF and then ON.
2) Set the subject to the white pattern standard picture frame.
3) Select adjustment address 89 (AWB MODE) and set the adjustment data to E0. Wait at least five seconds.
4) Change the adjustment address to store the adjustment data in the memory. Wait at least five seconds.
5) Remove the jumper wire between Pin (B6) (CAM ADJ) of the check point array and GND.
6) Connect Pin (B5) (AWB ADJ) of the check point array and Pin ④ of W902 (CAM 5V)with a 1 kΩ resistor.
7) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.
8) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array after allowing one second or more to elapse.
9) Remove the 1 kΩ resistor connected to Pin (B5) (AWB ADJ) of the check point array.
10) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.

2. Auto white balance adjustment (CV-9 board)

Note: Be sure to perform this adjustment after completing Preset Adjustment.

Subject	White pattern standard picture frame
Filter	Filter C14 for black temperature correction
Measuring Instrument	Oscilloscope (X-Y Mode)
Measurement Point	CH1 (X): Pin (B2) (B-Y) of check point array or collector of Q643 CH2 (Y): Pin (B1) (R-Y) of check point array or collector of Q613
Adjustment Address	01 (DELTA R) 02 (DELTA B) 80 (R OUTDOOR) 81 (B OUTDOOR) 77 (B UP LILIT) 78 (R OUT LIMIT) 79 (B OUT LIMIT) 65 (TOP SLP R) 66 (MDL SLP R) 73 (TOP UP) 74 (TOP DWN)
Specified Value	Move the white luminance point to the black luminance point.

Note: 1) Make connection to the video output terminals when the vectorscope is used.
2) All calculations in this section are made in decimal.

Adjustment method:

1) Select adjustment address 89 (AWB MODE) with the adjustment remote commander and enter adjustment data of 10.
2) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote commander to move the white luminance point and black luminance point.
(Move the white luminance point to pthe origin point when using the vectorscope.)
The adjustment data of adjustment address 01 is D_1 and the adjustment data of adjustment address 02 is D_2.
3) Select adjustment address 78 to enter adjustment data D_1.
4) Convert adjustment data D_1 to decimal to obtain D_1'.
Convert adjustment data D_2 to decimal to obtain D_2'.
(See Table 7-5 Hexadecimal-Decimal Conversion Table)
5) Obtain D_{80}' and D_{81}' by the following formula.
$D_{80}'=D_1'+1$
$D_{81}'=D_2'+3$
6) Convert D_{80}' and D_{81}' to hexadecimal and call this value D_{80} and D_{81}.
7) Select adjustment address 80 and enter adjustment data D_{80}.
Select adjustment address 81 and enter adjustment data D_{81}.
(Outdoor white balance adjustment.)
8) Obtain D_{77}' by the following formula.
$D_{77}'=(D_2' \times 1.9)-43.2$
9) Convert D_{77}' to hexadecimal and call this value D_{77}.
(Round off the decimal portion)
10) Select adjustment address 77 with the adjustment remote commander and enter adjustment data D_{77}.
Enter adjustment data D_1 to adjustment address 78.
11) Obtain D_{79}' by the following formula.
$D_{79}'=D_2'+10$
12) Convert D_{79}' to hexadecimal and call this value D_{79}.
13) Select adjustment address 79 with the adjustment remote commander and enter adjustment data D_{79}.
14) Obtain d' by the following formula.
$d'=(D_1' \times 5)+D_2'$
The adjustment procedure in 15) through 17) varies according to the value of d'.

[d' > 308]

15) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(D_1' \times 3)+(D_2' \div 2)+30$
$D_{74}'=D_{73}'-42$
16) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}.
(Round off the decimal portion)
17) Use the adjustment remote commander to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	20
66	01
73	D_{73}
74	D_{74}

Perform the adjustment steps beginning from 18).

[308 ≧ d' ≧ 286]

15) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(d' \div 2)+25$
$D_{74}'=D_{73}'-39$
16) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}.
(Round off the decimal portion)
17) Use the adjustment remote commander to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	41
66	01
73	D_{73}
74	D_{74}

Perform the adjustment steps beginning from 18).

[286 > d']

15) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(D_1' \times 3)+D_2'+30$
$D_{74}'=D_{73}'-42$
16) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}. (Round off the decimal portion)
17) Use the adjustment remote commander to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	20
66	00
73	D_{73}
74	D_{74}

18) Select adjustment address 89 and enter adjustment data 00.
19) Select adjustment address 89 and enter adjustment data F0.
20) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote commander to move the white luminance point and black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
21) Select adjustment address 89 and enter adjustment data of 00.
22) Change the adjustment address to store the adjustment data in the memory.

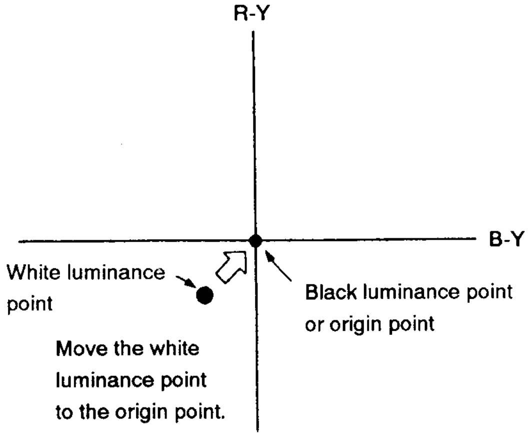

R-Y
B-Y
White luminance point
Black luminance point or origin point
Move the white luminance point to the origin point.

Fig. 7-36.

(Example)
When the adjustment data obtained in Step 2) has the following values.

Adjustment address	Adjustment data
01	2A
02	53

→ Entered into adjustment address 78.

D_1=2A and D_2=53 when there is conversion to decimal using Table 7-5.
$D_1'=42$
$D_2'=83$

Thus,
$D_{80}'=42+1=43$
$D_{81}'=83+3=86$
$D_{77}'=(83 \times 1.9)-43.2=114.5$

Rounding off the decimal portion and converting to hexadecimal by Table 7-5 results in,
D_{80}=2B → Entered into adjustment address 80.
D_{81}=56 → Entered into adjustment address 81.
D_{77}=72 → Entered into adjustment address 77
In the same manner,
$D_{79}'=(83+10)=93$
D_{79}=5D → Entered into adjustment address 79

In addition,
$d'=(42 \times 5)+83=293$

Thus, [308 ≧ d' ≧ 286]
$D_{73}'=(293 \div 2)+25=171.5$
∴ D_{73}=AC → Entered into adjustment address 73
$D_{74}'=171.5-39=132.5$
∴ D_{74}=85 → Entered into adjustment address 74

Also, adjustment data of 41 is entered into adjustment address 65, and adjustment data of 01 is entered into adjustment address 66.
The steps beginning from 18) are then performed.

7-2-30. Outdoor White Balance Confirmation (CV-9 Board)

Subject	White pattern standard picture frame
Filter	Filter C14 (C12+C2) for color temperature correction
Measurement Point	When vectorscope used: video output terminals When oscilloscope used: CH1 (X): Pin (B2) (B-Y) of check point array or collector of Q643 CH2 (Y): Pin (B1) (R-Y) of check point array or collector of Q613
Measuring Instrument	
Specified Value	See Fig. 7-37.

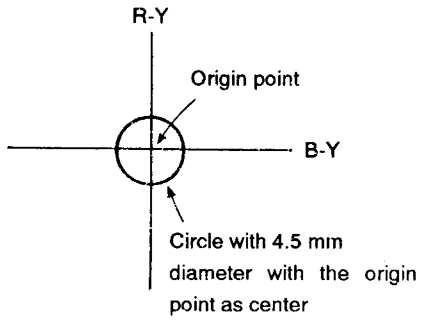
Connections:

1) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array. (Turns off the EVR adjustment mode)

Checking method:

1) Press the white balance button to select the outdoor white balance mode. (☀ mark is displayed on EVF screen or monitor TV screen (when data screen ON).)
2) Confirm that the center of the white luminance point is within the circle shown in the figure below.
   Note: When using a vectorscope, adjust the GAIN and PHASE of the vectorscope so that burst luminance point move to with the burst position of the color reproduction frame.

[When using vectorscope]



[When using oscilloscope]

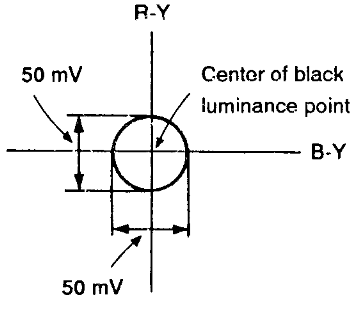


Fig. 7-37.

7-2-31. Focus Motor Speed Adjustment (CV-9 Board)

Subject	Arbitrary
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	A26 (FOCUS SPEED)
Specified Value	Average value of data indicated on jig=7.0 ± 0.5

Remarks: The rotation time from the close extreme to far extreme of the focus ring should be approximately 2.1 seconds after completion of adjustment.

Adjustment method:

1) Turn on the auto focus with FOCUS button (S655 on CK-8P board).
2) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of 01. (Sets hunching mode)
3) Set the adjustment address to 26.
4) Change the adjustment data so that the indication on the AF microcomputer data reading jig is 07 while the ring is rotating.
5) Press the HOLD button of the AF microcomputer data reading jig while the focus ring is rotating to read the indication value.
6) Repeat step 4) ten times and obtain the average value.
   Specified value=7.0 ± 0.5
   Repeat steps 3) and 4) if the specified value is not satisfied.
7) Set the adjustment address to 37 and set the adjustment data to 00. (Releases hunching mode)
8) Change the adjustment address to store the adjustment data in the memory.

7-2-32. Macro Area Adjustment (CV-9 Board)

Subject	Arbitrary
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	39 (MACRO)
Specified Value	(Value at zoom ring WIDE position) −1

Adjustment method:

1) Set the zoom ring to the WIDE position (9 mm position).
2) Select adjustment address 37 with the adjustment remote commander and set the adjustment data to 03. (Sets zoom position indication mode)
3) Read the data indicated on the AF microcomputer data reading jig. (Data in the range of 06 to 0E is displayed if normal.)
4) Change the adjustment address to 39.
5) Subtract 1 from the data read from the jig and enter as the adjustment data. (See Table 7-5. Hexadecimal-Decimal Conversion Table)
6) Change the adjustment address to 37 and set the adjustment data to 00. (Releases zoom position indication mode)
7) Change the adjustment address to store the adjustment data in the memory.

7-2-33. Auto-Focus LLA Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	38 (LLA)
Specified Value	(Value indicated on jig) −2

Adjustment method:

1) Select adjustment address 37 with the adjustment remote commander and set to 0B as the adjustment data. (Sets auto-focus LLA adjustment mode)
2) Read the data indicated on the AF microcomputer data reading jig and call this value D.
3) Subtract 2 from D and make this value the LLA data.
   (See Table 7-5. Hexadecimal-Decimal Conversion Table)

   (Example)
   When D=30 (48), LLA data is 2D (46)
   When D=31 (49), LLA data is 2F (47)
   ( ) is decimal equivalent
4) Select adjustment address 38 with the adjustment remote commander and enter the LLA data as the adjustment data.
5) Select adjustment address 37 and set 00 as the adjustment data. (Releases auto-focus LLA adjustment mode)
6) Change the adjustment address to store the adjustment data in the memory.

7-2-34. Auto-Focus Adjustment

1. Adjustment in all black pattern (CV-9 board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	42 (BASE-H)

Adjustment method:

1) Turn off the auto-focus with the FOCUS button (S655 on CK-8P board).
2) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of FF.
3) Read the indication on the AF microcomputer data reading jig and confirmm this value (FHB). (FHB should be 00 to 07.)
4) Obtain adjustment data D_{42} according to the following formulas.
   When FHB=0
   D_{42}=03
   When FHB > 0
   D_{42}=D+2 * Hexadecimal calculations
5) Select adjustment address 42 with the adjustment remote commander and enter D_{42} as the adjustment data.
6) Select adjustment address 37 and enter adjustment data of 00.
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform "Adjustment in Siemens star".

2. Adjustment in Siemens star (CV-9 board)

Subject	Siemens Star (1.5m in front of the lens reference surface (⌽ mark))
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	49 (KATAMUKI)
Specified Value	03 ≦ KATAMUKI<0D

Measurement method:

1) Place the Siemens Star 1.5m in front of the lens reference surface (see Fig. 7-2).
2) Set the zoom lever to the TELE end (54 mm) and turn auto-focus off with the FOCUS button (S655 on the CK-8P board).
3) Adjust camera position so that the center of the Siemens Star displayed on the monitor coincides with the center of the monitor screen.

7-3-3. Title Pedestal Adjustment (CV-9 Board)

Subject	All-black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of the check point array or video output terminal
Measuring Instrument	Oscilloscope
Adjustment Address	03 (PED)
Specified Value	Minimum 3.58 MHz chroma component

Adjustment method:

1) Put a black cap on the lens and press the MEMORY button (S657 on the CK-8P board).
2) Turn the data screen on with the DATA SCREEN button (S509 on the VK-1P board) and confirm that the letters "T WHT" are displayed on the monitor screen (if the indication differs, press the COLOR button (S656 on the CK-8P board) and set it to "T WHT").
3) Set the adjustment address 03 with the adjustment remote commander.
4) Change adjustment data with the adjustment remote commander so as to minimize the 3.58 MHz chroma component.
5) Change the adjustment address to store the adjustment data in the memory.

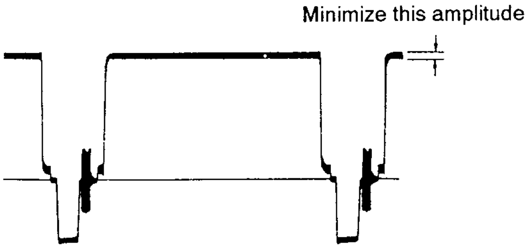


Fig. 7-42.

7-3-4. Title Y-level Adjustment (CV-9 Board)

Subject	All-black (over lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT)of the check point array
Measuring Instrument	Oscilloscope
Adjustment Address	24 (CHARACTER)
Specified Value	270 ± 20 mV

Adjustment method:

1) Put a black cap on the lens and press the MEMORY button (S657 on the CK-8P board).
2) Turn the data screen on with the DATA SCREEN button (S509 on the VK-1P board) and confirm that the letters "T WHT" are displayed on the monitor.
3) Set the adjustment address 24 with the adjustment remote commander.
4) Change adjustment data with the adjustment remote commander so that Y-signal level becomes 270 ± 20 mV.
5) Change the adjustment address to store the adjustment data in the memory.

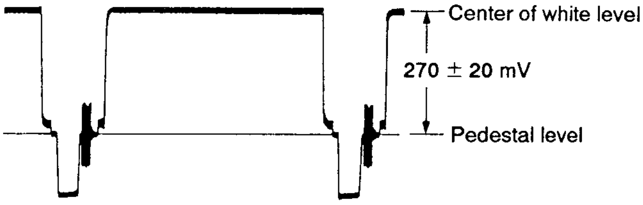


Fig. 7-43.

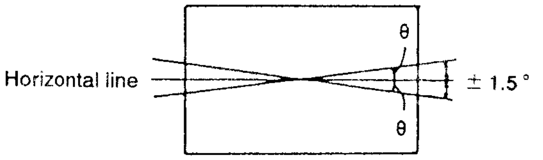
7-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

7-4-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-44.

Adjustment method:

1) By turning RV904 (BRIGHT), adjust for a luminance level which provides appropriate visibility of the CRT screen.
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the image horizontal by rotating DY.
4) Retighten the DY tightening nut. (Do not tighten excessively.)


θ
Horizontal line
± 1.5 °
θ

Specified value: Image orientation within ± 1.5 ° of horizontal line.

Fig. 7-44.

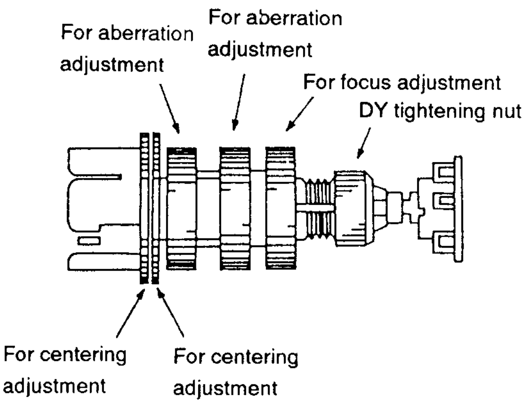

For aberration adjustment
For aberration adjustment
For focus adjustment
DY tightening nut
For centering adjustment
For centering adjustment

Fig. 7-45.

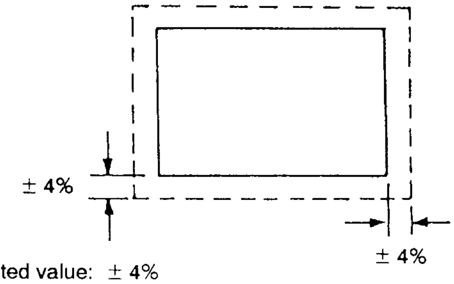
7-4-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-46.

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-45.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.



Adjusted value: ± 4%

Fig. 7-46.

7-4-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion

Adjustment method:

1) Adjust for optimum focus using the focus ring. (See Fig. 7-45.)

7-4-4. Aberration Adjustment

Mode	E–E
Signal	Dot pattern
Specified Value	See Fig. 7-47.

Adjustment method:

1) Use the aberration adjustment rings to adjust any trailing dots to within 2 times the dot diameter and any fan shaped aberrations to within the dot diameter.
2) If off center, repeat the Centering Adjustment.

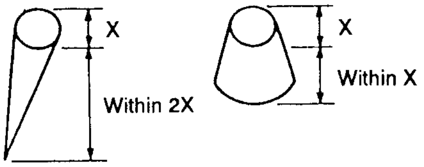


Fig. 7-47.

7-4-5. Horizontal Oscillation Frequency Adjustment (VF-14P Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP)
Measurement Point	Positive terminal of C904
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV901
Specified Value	2.60 ± 0.05 Vdc

Adjustment method:

1) Adjust to 2.60 ± 0.05 Vdc using RV901.

7-4-6. Horizontal Amplitude Adjustment (VF-14P Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	C911
Specified Value	6 ± 3%

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV902.
2) Rotate RV904 to set the brightness to the normal level.
3) Short or open the pattern (A) of the H size adjustment capacitor (C911) to provide horizontal overscans of 6 ± 3% (total of left and right).
(See Fig. 7-49.)

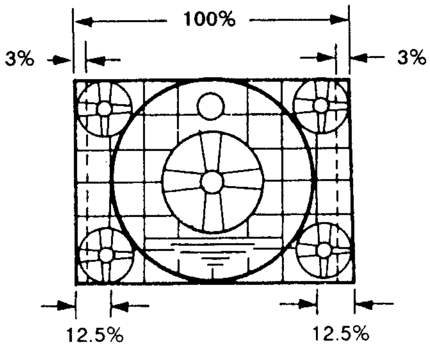
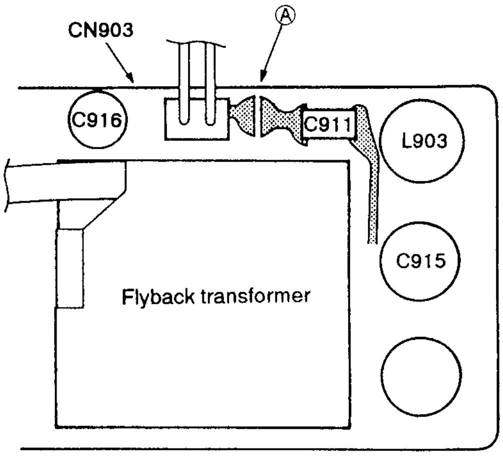


Fig. 7-48.



VF-14 Board (component side)

A section	H size
Open	Large
Short	Small

Fig. 7-49.

7-4-7. Vertical Amplitude Adjustment (VF-14P Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	RV902
Specified Value	5 ± 3%

Adjustment method:

1) By turning RV902, adjust vertical overscan to 5 ± 3% (upper and lower total).

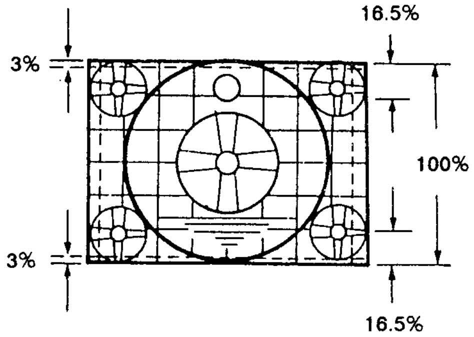


Fig. 7-50.

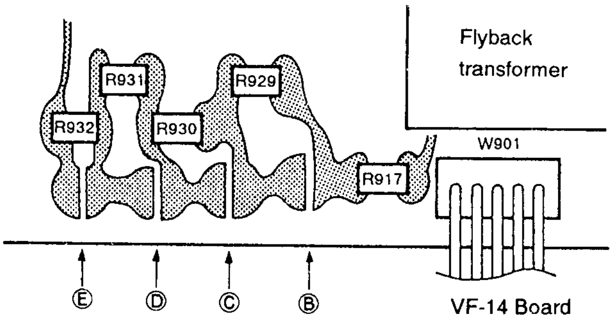
7-4-8. Brightness, Contrast Adjustments (VF-14P Board)

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	Brightness: RV904 Contrast: see Fig. 7-51.

Adjustment method:

1) Perform brightness and contrast adjustments alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

Use sections Ⓑ to Ⓔ of VF-14P board to open and short for contrast adjustment.



Sections to be shorted	Contrast
Ⓓ and Ⓔ	High
Ⓔ	
Ⓓ	
All open	
Ⓒ	
Ⓑ	
Ⓑ and Ⓒ	Low

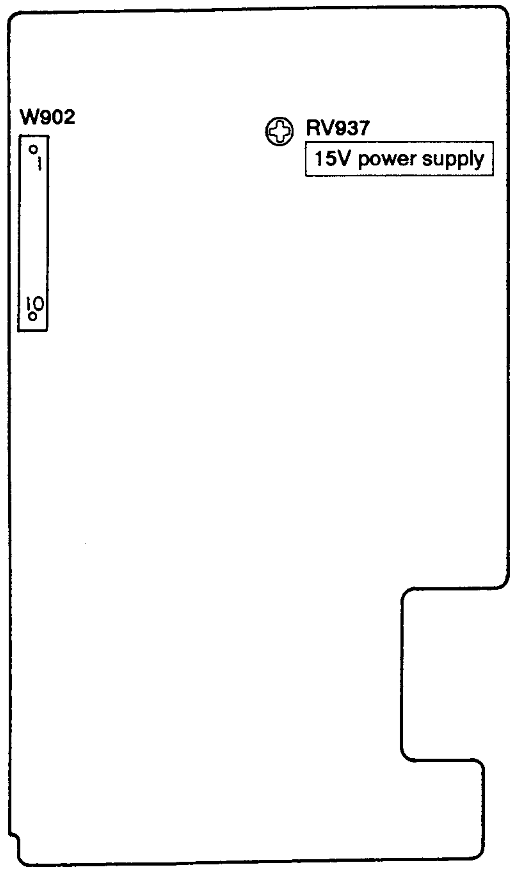
Fig. 7-51.

7-4-9. Horizontal Amplitude, Vertical Amplitude and Focus Checks

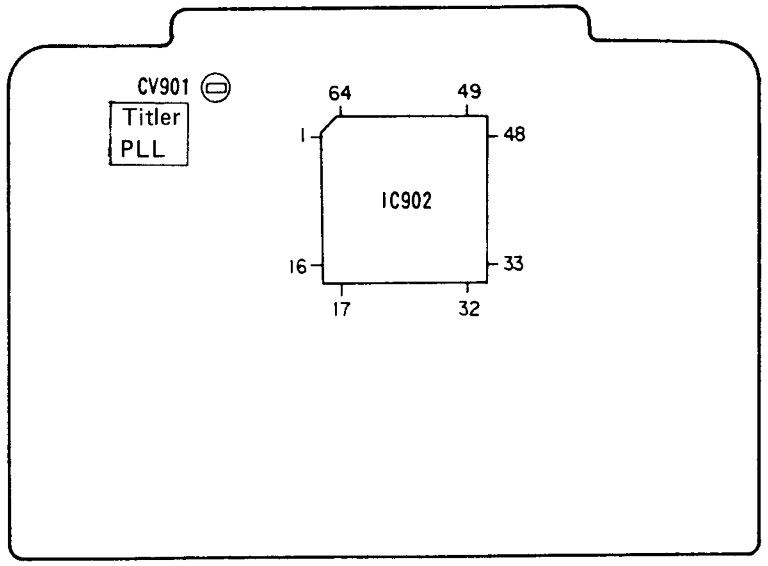
Values should conform to specifications given in 7-4-6. Horizontal Amplitude Adjustment and 7-4-7. Vertical Amplitude Adjustment. If not, readjust accordingly, and repeat 7-4-8. Brightness, Contrast Adjustments. In this case, focus needs to be checked. If the image is not clear, perform 7-4-3. Focus Adjustment and 7-4-4. Aberration Adjustment.

7-5. ADJUSTMENT ELEMENTS LOCATION

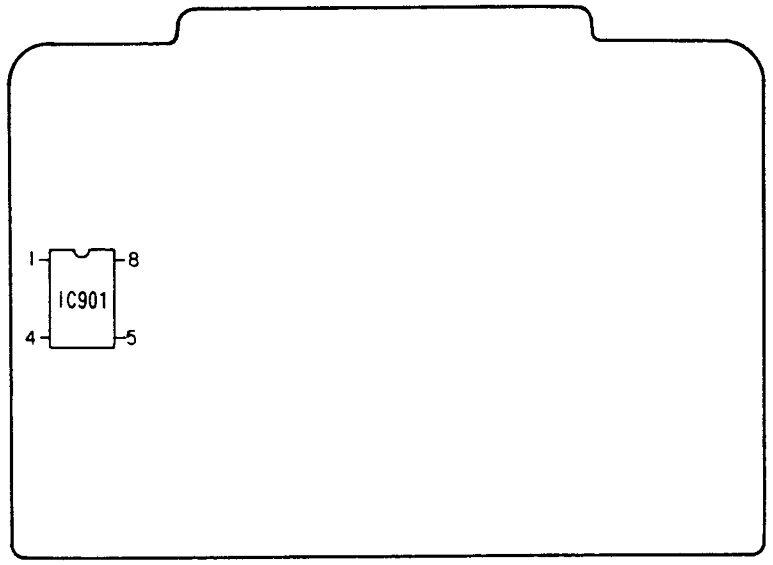
PS-180P BOARD (COMPONENT SIDE)


W902
1
10
RV937
15V power supply

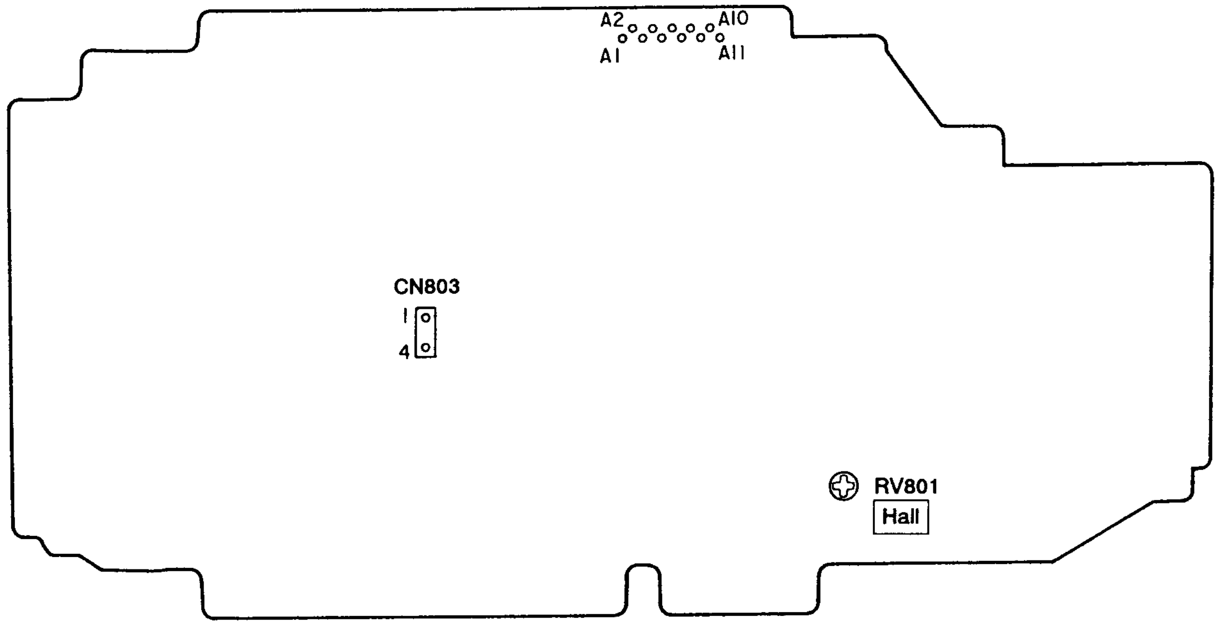
LI-10 BOARD (COMPONENT SIDE)


CV901
Titler
PLL
64
49
1
48
IC902
16
33
17
32

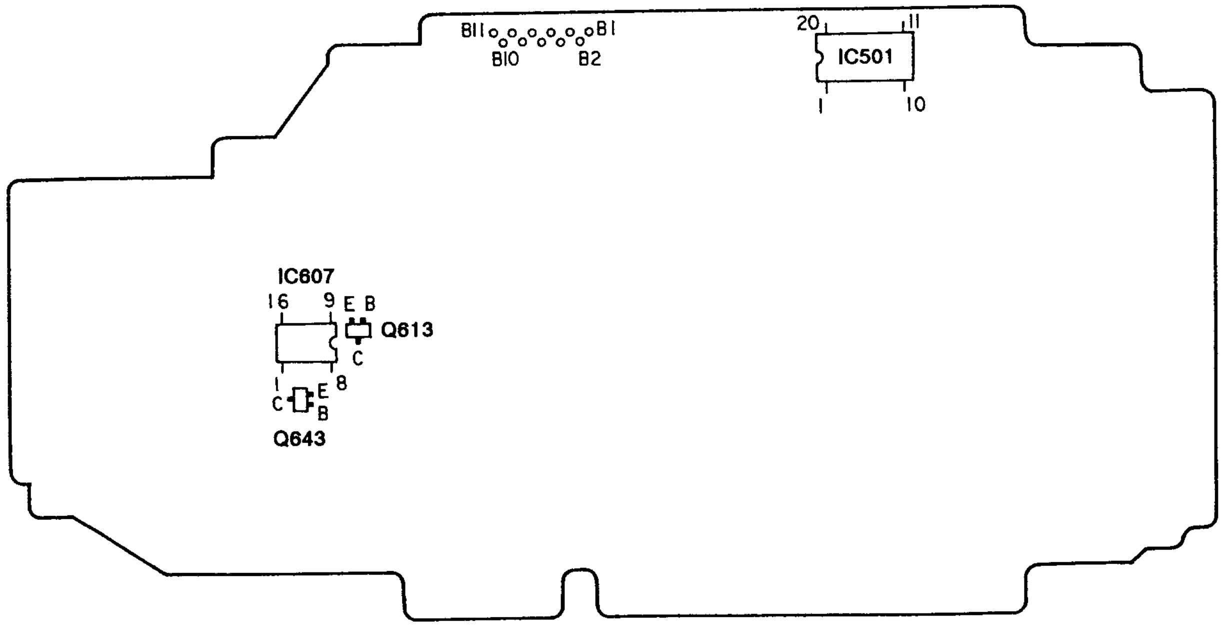
LI-10 BOARD (CONDUCTOR SIDE)



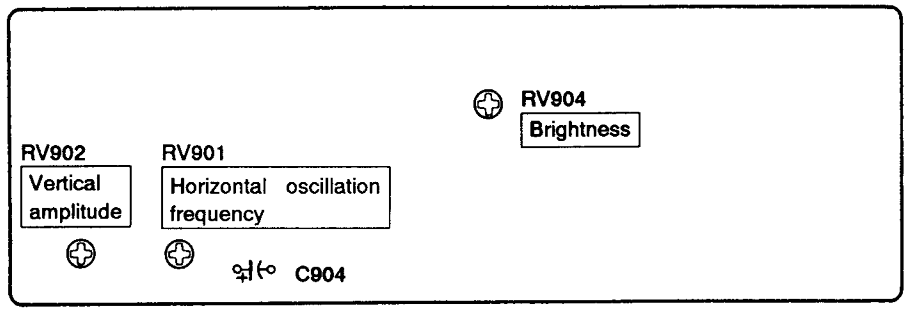
CV-9 BOARD (COMPONENT SIDE)


A2
A10
A1
A11
CN803
1
4
RV801
Hall

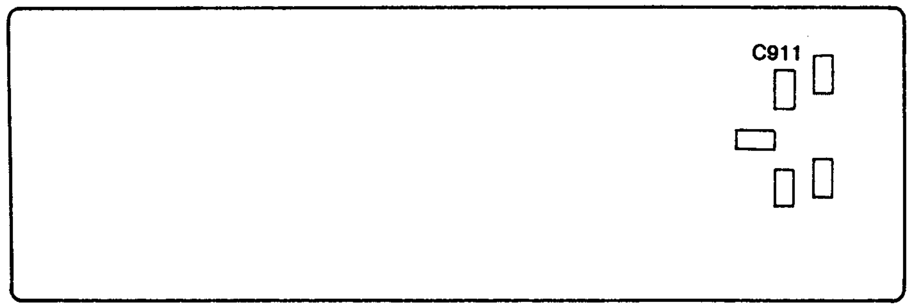
CV-9 BOARD (CONDUCTOR SIDE)


B11
B1
B10
B2
20
11
IC501
1
10
IC607
16
9
E
B
Q613
C
1
8
C
E
B
Q643

VF-14P BOARD (COMPONENT SIDE)


RV904
Brightness
RV902
Vertical amplitude
RV901
Horizontal oscillation frequency
C904

VF-14P BOARD (CONDUCTOR SIDE)



SECTION 8
MECHANISM BLOCK ADJUSTMENTS

Mechanism Block Adjustments

Refer to the separate "8mm Video Mechanical Adjustment Manual III U Mechanism" for adjustment and checking of the mechanism block and for replacement of mechanical parts.
Refer to the following for setting of track shift mode.

8-1. TRACK SHIFT MODE SETTING

[Setting method]

- Connect the TEST A terminal and TEST B terminal to the COM terminal. Connect Pin ① and Pin ③ of CN508 on the VK-1P board to Pin ②. (See Fig. 8-1.)

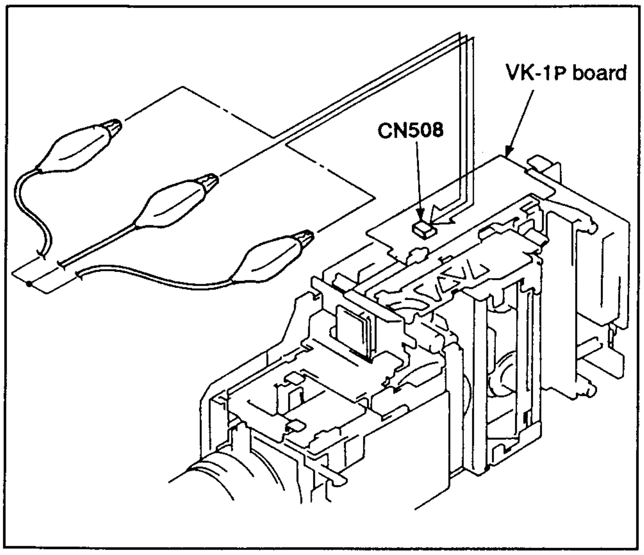

VK-1P board
CN508

Fig. 8-1.

8-2. PREPARATION FOR ADJUSTMENT

1) Perform cleaning of the tape running surface (tape guides, drums, capstan shafts, and pinch rollers).
2) Connection of oscilloscope
   CH 1: RF signal output (V RF OUT) of drum head
   Pin ③ (V RF OUT) of CN102 on the CO-2P board
   External trigger: External trigger output (RF SW.P)
   Pin ④ of CN102 on the CO-2P board.
3) Play back the alignment tape (WR5-1C, Ref No. J-5) for tracking.
4) Confirm that the RF waveform on oscilloscope at both entrance and exit sides is flat. (See Fig. 8-3.)
   Perform the adjustment described below if not flat.

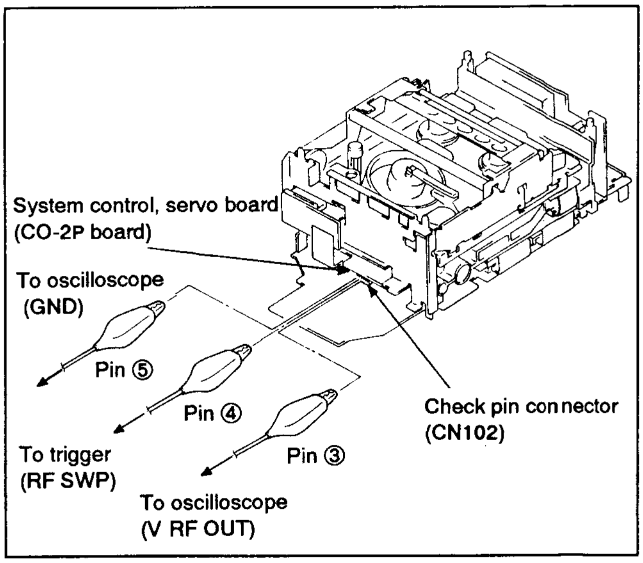

System control, servo board
(CO-2P board)
To oscilloscope
(GND)
Pin ⑤
Pin ④
To trigger
(RF SWP)
Pin ③
To oscilloscope
(V RF OUT)
Check pin connector
(CN102)

Fig. 8-2.

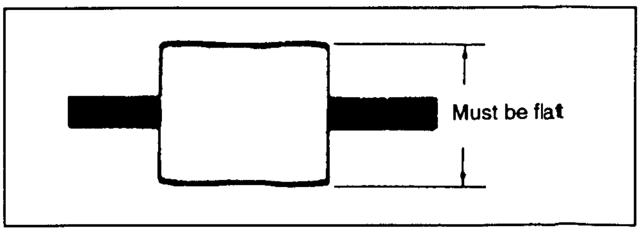

Must be flat

Fig. 8-3.

SECTION 9
VIDEO BLOCK ADJUSTMENTS

During the adjustments, see the adjustment element location to the adjustment from page 258.

Use the following measuring instruments for adjustment of the VTR block.

[Equipment to be used]

1) Monitor TV
2) Dual trace oscilloscope of over 10 MHz band, incorporates delay mode. (Use 10 : 1 probe unless otherwise specified)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tapes
    Tracking adjustment (WR5-1C)
        Parts Code: 8-967-995-06
    Video frequency characteristics adjustment (WR5-6C) *1
        Parts Code: 8-967-995-17
    Operation check (WR5-4CL) *2
        Parts Code: 8-967-995-56
        (WR5-5CSP) *3
        Parts Code: 8-967-995-47
    Note:
    *1 WR5-2C (8-967-995-16) is also available.
    *2 WR5-3CL (8-967-995-36) is also available.
    *3 WR5-3CSP (8-967-995-27) and WR5-4CSP (8-967-995-46) are also available.
12) Adjustment remote commander (Modification of RM-95)

[Connection of equipment]

Unless otherwise specified, adjustment is made with the measuring instrument connected as shown in the diagram below.

- Camera/video power switch......Video position

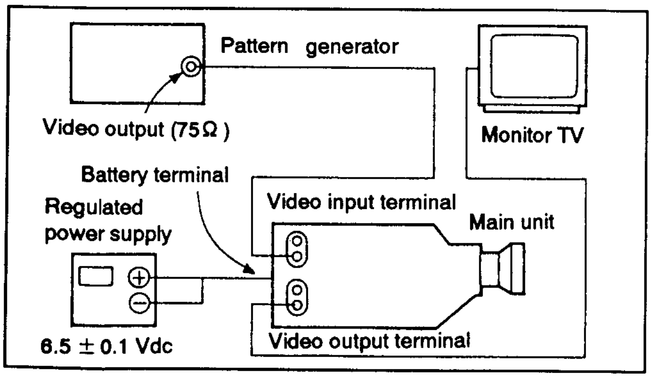
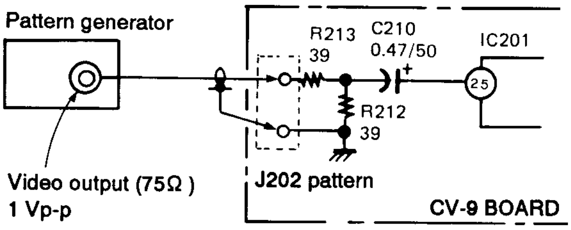

Pattern generator
Video output (75Ω)
Monitor TV
Battery terminal
Regulated power supply
Video input terminal
Main unit
Video output terminal
6.5 ± 0.1 Vdc

Fig. 9-1.

- Video signal input for model not provided with external input terminals.


Pattern generator
R213 39
C210 0.47/50
IC201
25
R212 39
Video output (75Ω) 1 Vp-p
J202 pattern
CV-9 BOARD

Note: Mount R212, R213 and C210.

- Setting the REC mode in models without external input terminals
  1. Connect Pins ① and ⑦ of the VK-1P board with a diode (1SS119, etc.) until the unit enters the REC mode.

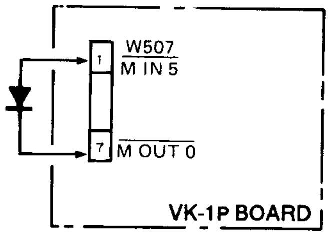

1
W507
M IN 5
7
M OUT 0
VK-1P BOARD

Fig. 9-2.

[Set-up during adjustment]

Since the video output signal obtained from the pattern generator is used as the adjusting signal for the VTR block, it is necessary that this video output signal be within the required specifications. Connect an oscilloscope to J202 (video input terminal) on the CV-9 board and make sure that the amplitude of the video SYNC signal is approximately 0.3V, that the video block amplitude is approximately 0.7V, that the burst signal amplitude is approximately 0.3V with flat characteristics, and the signal level ratio between the burst signal and "Red" signal is 0.30 : 0.66. The video signal (color bars) used for VTR block electrical adjustment are shown in Fig. 9-3.

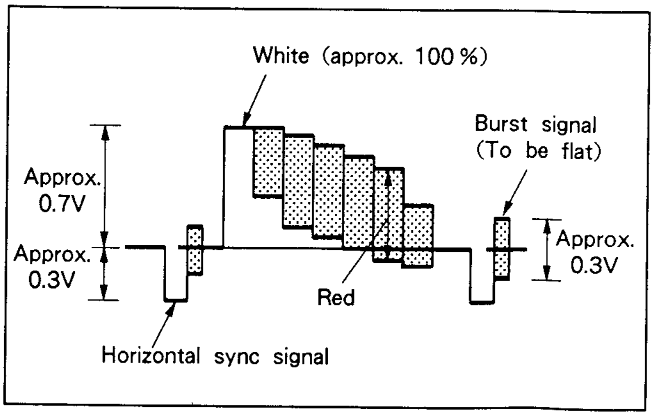
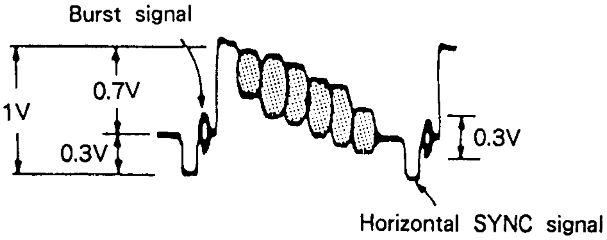
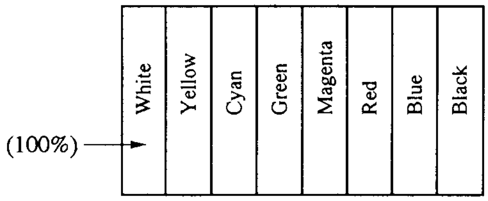

White (approx. 100%)
Burst signal (To be flat)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal

Fig. 9-3. Color bar signal of pattern generator

[Alignment tapes]

Tape	Content	Use
Tracking (WR5-1C)	1. Recording area: PCM – video 2. Recording content: CH2:1MHz linearity adjustment signal (CH1: 9MHz)	Drum linearity adjustment
Video Frequency Response (WR5-6C)	1. Recording area: Video 2. Recording content: RF sweep 0 to 10MHz 3. Maker: 1, 3.58, 5.5 and 7MHz	Frequency response adjustment
Operation Check SP mode (WR5-5CSP) LP mode (WR5-4CL) Note: PCM area is not included in WR5-4CL	1. Recording area: Video 2. Recording content: ■ Video track •Video signals Color bars 4 minutes Monoscope 4 minutes (Color bars)  Burst signal 1V 0.7V 0.3V 0.3V Horizontal SYNC signal  White Yellow Cyan Green Magenta Red Blue Black (100%) •Audio signals(AFM) 400Hz 60% modulation ■ PCM area •Audio signals(PCM) 1kHz 4 minutes — Color bar 20Hz 2sec 400Hz 4sec 14kHz 2sec } Iterative Monoscope	Operation check

E, Australian model

[I/O level and impedance]

Video input Pin jack
Input signal: 1 Vp-p, 75Ω unbalanced, negative sync
Video output Pin jack
Output signal: 1 Vp-p, 75Ω unbalanced, negative sync
Audio input Pin jack
Input level: –7.5 dBs (0 dBs=0.775 Vrms)
Input impedance: More than 47 kΩ
Audio output Pin jack
Specified output: –7.5 dBs
Output impedance: More than 2.2 kΩ

AEP, UK model

[Output level and impedance]

Video output Pin jack
Output signal: 1 Vp-p, 75Ω unbalanced, negative sync
Audio output Pin jack
Specified output: –7.5 dBs
Output impedance: More than 2.2 kΩ

[Service modes]

This unit is equipped with service modes for adjustment and operation checking.
There are the following two service modes and switching between them is by connection between GND and Pin (B6) of the check point array on the CV-9 board.

Service Mode	Function	Connection between GND and Pin (B6) of the check point array (CV-9 board)
Status indication mode	For video block adjustment, operation checking	Open (no connection)
EVR adjustment mode	For adjustment of camera block	Shorted

Refer to Camera Block Adjustment for details on the EVR adjustment mode.

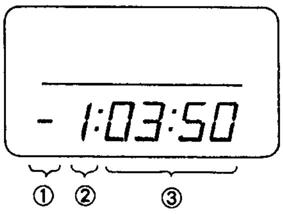
1. Invoking service mode

1) Connect the adjustment remote controller to the remote terminal (J951 on RC-26P board) of the main unit.
2) Set the HOLD switch of the adjustment remote commander to the HOLD position (SERVICE position).

The status indication mode is invoked by the above operation. (To select the EVR adjustment mode, connection between Pin (B6) of the check point array and GND is required.)

2. Indication on adjustment remote controller LCD in status indication mode

Note: In categories 1 through 4, the same information is displayed in the EVF screen and on the monitor screen (when the data screen is ON).



①...... Minus segment flashes to indicate that the service mode has been invoked.
②...... Indicates service mode category.
③...... Indicates battery voltage, LAST EMG, PRESET EMG, or MODE SW CODE according to current category.

3. Category selection and indication in each category

Select the desired category with the FF or REW button of the adjustment remote controller. There are four categories (1 through 4) and the indications are different for each. (Note that category 0 is the EVR adjustment mode.)

<table>
<tr><th>Caategory</th><th>Indication on LCD</th></tr>
<tr><td>1</td><td>A/D conversion value for battery voltage (decimal indication)[*1]
00 : 00 – 02 : 55</td></tr>
<tr><td>2</td><td>LAST EMG (last emergency)[*2]
Refer to Service Mode Error Indications.</td></tr>
<tr><td>3</td><td>PRESENT EMG (current emergency)[*3]
Refer to Service Mode Error Indications.</td></tr>
<tr><td>4</td><td>MODE SW CODE (mechanism status)
<table>
<tr><td>00 : 00</td><td>EJECT</td></tr>
<tr><td>00 : 01</td><td>I.A</td></tr>
<tr><td>00 : 02</td><td>UNLOAD</td></tr>
<tr><td>00 : 03</td><td>I.B</td></tr>
<tr><td>00 : 04</td><td>STOP (threading completed)</td></tr>
<tr><td>00 : 05</td><td>I.C</td></tr>
<tr><td>00 : 06</td><td>RP(REC, PB, FF, REW, CUE, REVIEW, PAUSE)</td></tr>
<tr><td>00 : AA</td><td>Mode switch error</td></tr>
</table></td></tr>
</table>

Notes: 1) Indicates a value proportional to the battery voltage.
2) LAST EMG indicates the error occurring last before entering service mode. Even if an error occurs in the service mode, it is not indicated.
3) PRESENT EMG indicates the status when the FF or REW button of the adjustment remote controller was pressed. So, the indication does not change even if the error is eliminated.

- **Service mode error indication**

Error Status	PRESENT EMG Indication LAST EMG	Indication
No error	00 : 00	00 : 00
Loading motor	00 : 01	00 : 01
REEL FG error during unthreading	00 : 02	00 : 02
REEL FG error not during unthreading	00 : 03	00 : 03
Capstan error	00 : 04	00 : 04
DRUM PG error (0) when starting drum	00 : 05	00 : 05
DRUM PG error (1) when starting drum	01 : 05	00 : 14 or 00 : 0E
DRUM PG error (2) when starting drum	02 : 05	00 : 15 or 00 : 0F
No DRUM PG (0) when starting drum	00 : 06	00 : 06
No DRUM PG (1) when starting drum	01 : 06	00 : 14 or 00 : 0E
No DRUM PG (2) when starting drum	02 : 06	00 : 15 or 00 : 0F
DRUM FG error (0) when drum stationary	00 : 07	00 : 07
DRUM FG error (1) when drum stationary	01 : 07	00 : 14 or 00 : 0E
DRUM FG error (2) when drum stationary	02 : 07	00 : 15 or 00 : 0F
No DRUM PG (0) when drum stationary	00 : 08	00 : 08
No DRUM PG (1) when drum stationary	01 : 08	00 : 14 or 00 : 0E
No DRUM PG (2) when drum stationary	02 : 08	00 : 15 or 00 : 0F
Phase error (0) when drum stationary	00 : 09	00 : 09

(1) During tape threading
(2) During tape unthreading
(0) Other

4. Releasing service mode

The service mode is released by returning the HOLD switch of the adjustment remote controller to the NORMAL position or by disconnecting the adjustment remote controller from the remote terminal.

[Test modes]

This unit has three test modes which are invoked by connecting the terminals of CN508 on the VK-1P board.

Test Mode	Connection of CN508 on VK-1P Board	Function
1	Pin ③ (TEST A) and Pin ② (GND) short-circuited	1. Switching position adjustment possible. 2. Error detection disabled.
2	Pin ① (TEST B) and Pin ② (GND) short-circuited	1. For battery end detection adjustment BATTERY SENSE voltage (input voltage to Pin ㊽ of IC501) is displayed in EVF and monitor screen (only when data screen is ON). – 1 : 03 : 05 Mode indication BATTERY SENSE voltage
3	Pin ③ (TEST A) and Pin ② (GND)/Pin ① (TEST B) and Pin ② short-circuited.	1. For tape path adjustment (Tracking shifted by 1/4 track) Refer to MECHANISM ADJUSTMENTS.

9-1. POWER SUPPLY ADJUSTMENTS AND CHECKS

9-1-1. Oscillation Frequency Adjustment (PS-180P Board)

Mode	Stop (POWER ON)
Measurement Point	Collector of Q941
Measuring Instrument	Frequency counter
Adjustment Element	RV938
Specified Value	475 ± 5 kHz

Adjustment method:

1) Adjust the oscillation frequency to 475 ± 5 kHz with RV938.

9-1-2. Video 5V Adjustment (PS-180P Board)

Mode	Stop (POWER ON)
Measurement Point	Pin ① of W901
Measuring Instrument	Digital voltmeter
Adjustment Element	RV936
Specified Value	5.10 ± 0.05 Vdc

Adjustment method:

1) Adjust with RV936 so that it becomes 5.10 ± 0.05 Vdc.

9-2. SYSTEM CONTROL ADJUSTMENTS

9-2-1. Battery Down Adjustment (CO-2P Board)

Mode	Camera recording
Signal	Arbitrary
Measurement Point	Confirmation on monitor screen
Measuring Instrument	
Adjustment Element	RV551
Specified Value	Battery indication (🔋) flashes at a rate of 3.8 times per second (3.8 Hz) and counter value is approximately "–1 : 02 : 85".

Connections:

1) Connect a regulated power supply and digital voltmeter as shown in Fig. 9-4.
2) Connect Pin ① (TEST B) and Pin ② (GND) of CN508 on the VK-1P board with a jumper wire. (Test 2 mode)

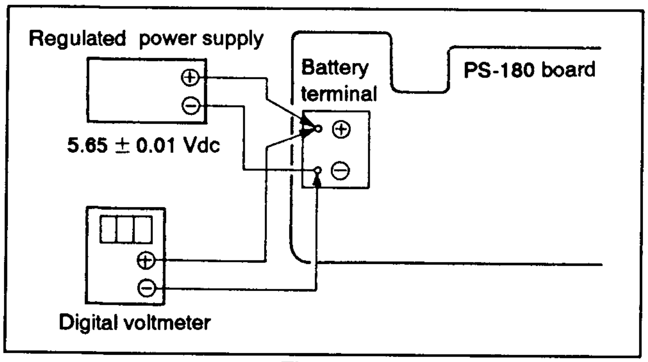


Fig. 9-3.

Adjustment method:

1) Press the data screen button (S509) on the VK-1P board to display the counter on the monitor screen. (See Fig. 9-5.)
2) Confirm that the indication on the digital voltmeter is 5.65 ± 0.01 Vdc.
3) Slowly rotate RV551 and set to the closest point at which the battery indication (🔋) on the monitor screen flashes at a rate of 3.8 times per seconds (3.8 Hz) and the counter value is "–1 : 02 : 85".

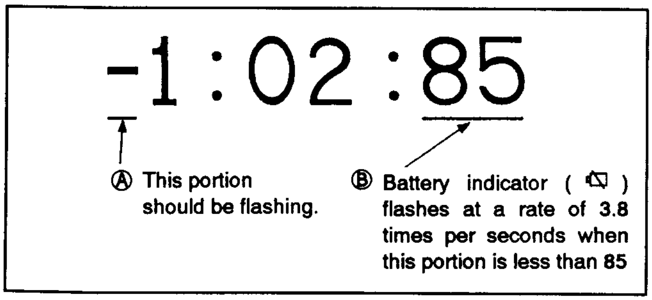

-1 : 02 : 85
Ⓐ This portion should be flashing.
Ⓑ Battery indicator (🔋) flashes at a rate of 3.8 times per seconds when this portion is less than 85

Fig. 9-4.

Checking method:

Perform the following checks and repeat the adjustments again if the required conditions are not satisfied.

1) Adjust the output voltage of the regulated power supply so that the indication of the digital voltmeter becomes 5.70 ± 0.01 Vdc.
2) Set the unit to the camera REC mode after turning the power off and then on.
3) Press the data screen button on the VK-1P board so that there is data indication on the monitor screen.
4) Confirm that the battery indicator (🔋) on the monitor screen is out or flashing at a rate of 0.8 times per second.
5) Slowly lower the output voltage of the regulated power supply until the indication on the digital voltmeter becomes 5.60 ± 0.01 Vdc.
6) Confirm that the battery indicator (🔋) is flashing on the monitor screen at a rate of 3.8 times per second (3.8 Hz).

9-2-2. System Clock Adjustment (CK-8P Board)

Mode	Power ON
Measurement Point	Pin ⑱ of IC651
Measuring Instrument	Frequency counter
Adjustment Element	RV651
Specified Value	330 ± 5 kHz

Adjustment method:

1) Adjust with RV651 so that it becomes 330 ± 5 kHz.

9-2-3. Clock Precision Adjustment (CK-8P Board)

Mode	Power OFF
Measurement Point	Pin ㊶ of IC651
Measuring Instrument	Frequency Counter
Adjustment Element	CV651
Specified Value	8192.00 ± 0.04 Hz

Adjustment method:

1) Disconnect the main power supply and lithium battery.
2) Connect Pin ㉘ (TEST) of IC651 to ground using a jumper wire (TEST mode).
3) Supply 3V (3.0 ± 0.05 Vdc) of power to the lithium battery terminals from a regulated power supply.
4) Adjust to 8192.00 ± 0.04 Hz using CV651.
5) Disconnect the regulated power supply and the jumper wire.

9-3. SERVO SYSTEM ADJUSTMENTS

9-3-1. Oscillation Frequency Adjustment (CO-2P Board)

Mode	Recording (SP mode)
Signal	Color bar
Measurement Point	Pin ⑩ of IC621
Measuring Instrument	Frequency counter
Adjustment Element	RV621
Specified Value	480 ± 5 kHz

Adjustment method:

1) Set the oscillation frequency to 480 ± 5 kHz using RV621.

9-3-2. REC ATF Level Checking (CO-2P Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q530
Measuring Instrument	Oscilloscope
Specified Value	Approx. 900 mVp-p

Checking method:

1) Confirm that the REC ATF signal level is approximately 900 mVp-p.

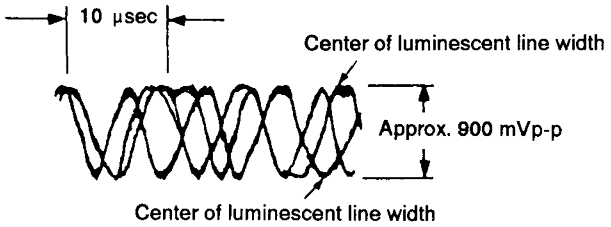

10 μsec
Center of luminescent line width
Approx. 900 mVp-p
Center of luminescent line width

Fig. 9-6. REC ATF level checking

9-3-3. Switching Position Adjustment (CO-2P Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	CH-1: J201 (video output) on CV-9 board CH-2: Pin ④ (RF SWP) of CN102
Measuring Instrument	Oscilloscope
Adjustment Element	RV501
Specified Value	6.5 ± 0.3H (410 ± 20 μs)

Connections:

1) Connect Pin ③ (TEST A) and Pin ② (GND) of CN508 on the VK-1P board using a jumper wire. (Test 1 mode)

Adjustment method:

1) Adjust with RV102 so that it becomes 6.5 ± 0.3H (410 ± 20 μs).

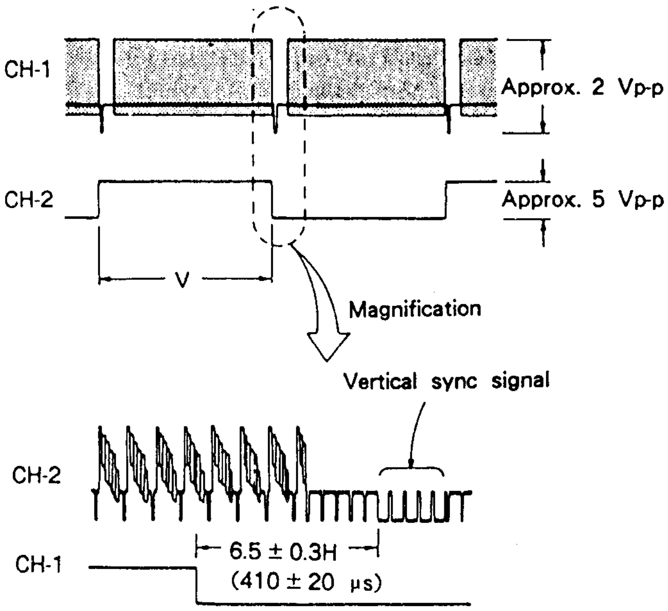

CH-1
Approx. 2 Vp-p
CH-2
Approx. 5 Vp-p
V
Magnification
Vertical sync signal
CH-2
CH-1
6.5 ± 0.3H
(410 ± 20 μs)

Fig. 9-7. Switching position adjustment

9-3-4. Still Adjustment (CV-9 Board)

Mode	Playback pause (LP)
Signal	Self-recorded tape of color bars signal
Measurement Point	Monitor TV screen
Measuring Instrument	
Adjustment Element	RV552
Specified Value	Equal top and bottom noise bands

Adjustment method:

1) Play back the self-recorded tape and press the PAUSE button to set the playback pause mode after the image has stabilized.
2) Confirm that the noise bands on top and bottom of the screen are eual.
3) If the specified condition is not satisfied, adjust RV552 and repeat 1) and 2).

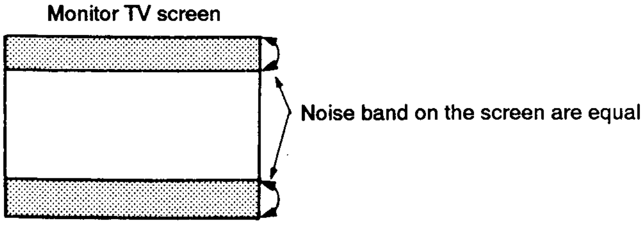


Fig. 9-8. Still adjustment

9-4. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure outlined below.
The color video signal supplied from the pattern generator is utilized as the video input signal for video system adjustment in the recording mode. Make sure that the sync signal and color burst signal match the specifications given in set-up for adjustment, as shown in Fig. 9-3.

[Adjustment procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C separation adjustment
5) IR2 adjustment
6) SYNC AGC adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) Y FM carrier frequency adjustment
10) Y FM deviation adjustment
11) Chroma emphasis fo adjustment
12) REC Y level adjustment
13) REC C level adjustment
14) Feedback chroma adjustmmt
15) Quasi burst phase adjustment
16) Delay burst phase adjustment
17) DDS character position adjustment
18) Character generator fo adjustment

9-4-1. Playback Frequency Characteristics Adjustment (CO-2P Board)

1. CH1, CH2 adjustment

The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristics adjustment (WR5-6C)
Measurement Point	Pin ③ of CN102 External trigger: Pin ④ of CN102 Trigger slope: +, [–]
Measuring Instrument	Oscilloscope
Adjustment Element	RV101 [RV102]
Specified Value	3.58 MHz level : 5.5 MHz level=4 : 3

Adjustment method:

1) Adjust RV101 [RV102] so that the ratio of the 3.58 MHz level to the 5.5 MHz level is 4 : 3 [4 : 3].

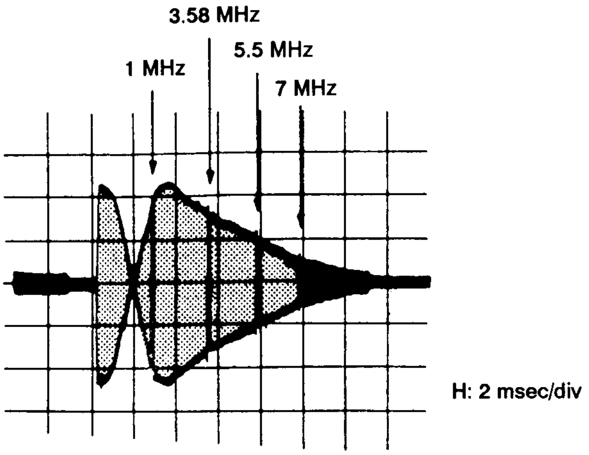


Fig. 9-9. Playback frequency characteristics adjustment

9-4-2. Flying Erase Check (CO-2P Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (TP103: FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 7.95 ± 5.5 MHz Voltage: 7.75 ± 0.75 Vp-p

Note: Be sure to use MP type tape. (Pin ⑪ of CN501 should be "L".)

Checking method:

1) Confirm that the oscillation frequency is 7.95 ± 5.5 MHz and the oscillation voltage is 7.75 ± 0.75 Vp-p.

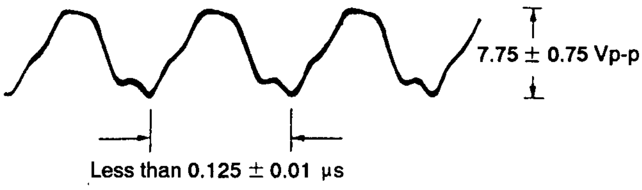


Fig. 9-10.

9-4-3. Crystal Oscillator fo Checking (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	Pin ⑩ of W202 (fsc IN)
Measuring Instrument	Frequency counter
Specified Value	4433619^{+50}_{-60} Hz

Checking method:

1) Confirm that the oscillation frequency at Pin ⑩ of W202 is 4433619^{+50}_{-60} Hz.

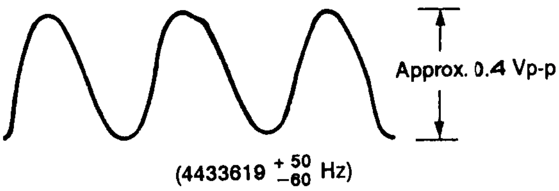


Fig. 9-11. Crystal oscillator fo adjustment

9-4-4. Y/C Separation Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Any terminal of RV204 (DEV) (Pin ㉕ of IC203)
Measuring Instrument	Oscilloscope
Adjustment Element	RV202
Specified Value	Minimum residual chroma component

Connections:

1) Connect Pin (39) of IC203 (Pin ⑭ of IC202) to GND with a 10 µF/16V electrolytic capacitor. (Capacitor negative side to GND)

Adjustment method:

1) Set the residual chroma component to minimum with RV202.

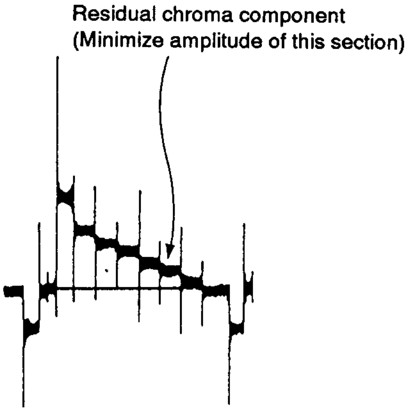

Residual chroma component
(Minimize amplitude of this section)

Fig. 9-12. Y/C separation adjustment

9-4-5. IR2 Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Pin ⑧ of IC203 or base of Q252 (BF OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV203
Specified Value	a=b (see Fig. 9-13.)

Adjustment method:

1) Adjust RV203 so that it becomes 6.9 ± 0.2 µsec.

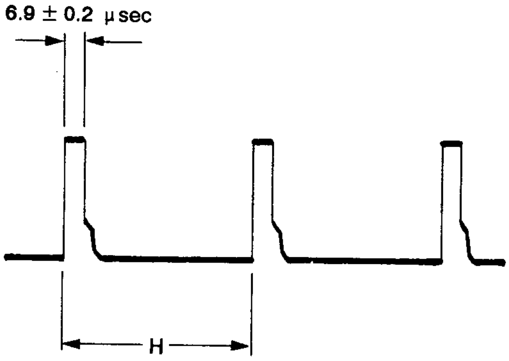


Fig. 9-13. IR2 adjustment

9-4-6. SYNC AGC Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV201
Specified Value	1.00 ± 0.05 Vp-p

Note: Terminate VIDEO OUT (J201) at 75Ω .

Adjustment method:

1) Adjust with RV201 so that it becomes 1.00 ± 0.05 Vp-p.

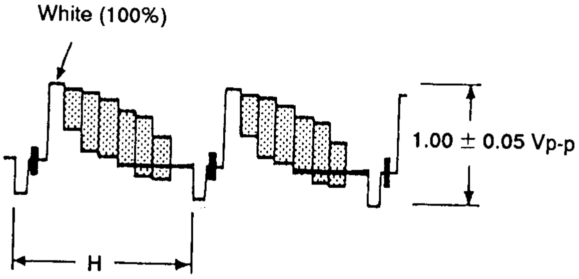


Fig. 9-14. SYNC AGC adjustment

9-4-7. Emphasis Input Level Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin (57) of IC203
Measuring Instrument	Oscilloscope
Adjustment Element	RV401
Specified Value	0.50 ± 0.02 Vp-p

Adjustment method:

1) Adjust with RV401 so that it becomes 0.50 ± 0.02 Vp-p.

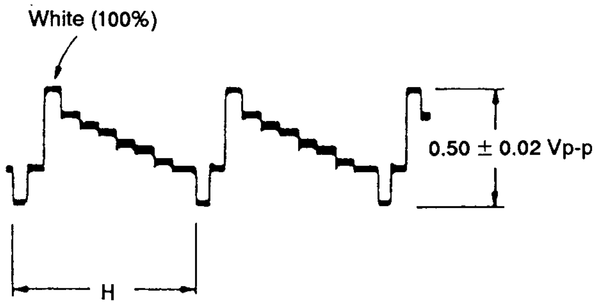


Fig. 9-15. Emphasis input level adjustment

9-4-8. PB Y Level Adjustment (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP) Color bar section
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV402
Specified Value	1.00 ± 0.04 Vp-p

Note: Terminate VIDEO OUT (J201) at 75Ω .

Adjustment method:

1) Adjust with RV402 so that it becomes 1.00 ± 0.04 Vp-p.

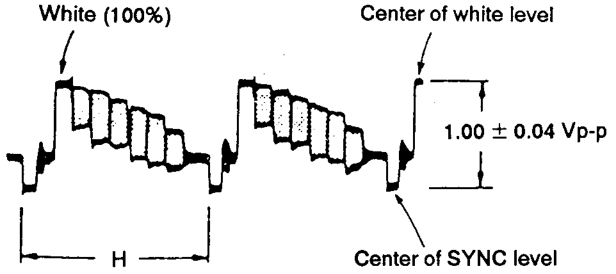


Fig. 9-16. PB Y level adjustment

9-4-9. Y FM Carrier Frequency Adjustment (CV-9 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q232 or center terminal of RV207 (REC Y)
Measuring Instrument	Frequency counter
Adjustment Element	RV205
Specified Value	4.39 ± 0.02 MHz

Adjustment method:

1) Adjust to 4.39 ± 0.02 MHz with RV205.
2) Perform "Deviation Adjustment".

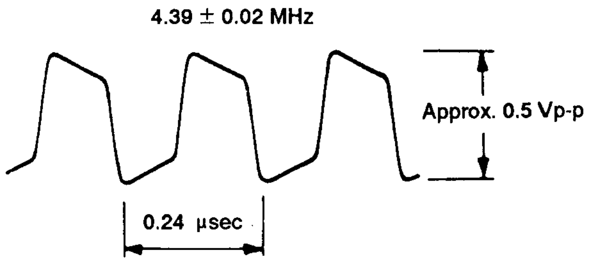


Fig. 9-17. Y FM carrier frequency adjustment

9-4-10. Y FM Deviation Adjustment (CV-9 Board)

Mode	Recording and playback
Signal	Color bar
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV204
Specified Value	Playback level is 1.00 ± 0.04 Vp-p

Notes: 1) Confirm that "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.
2) Terminate VIDEO OUT (J201) at 75Ω.

Adjustment method:
1) Record the color bar signal.
2) Playback the recorded signal.
3) Confirm the playback output.
Specified value: 1.00 ± 0.04 Vp-p
4) If the specified value is not satisfied, repeat 1) to 3) after turning RV204 in the following manner.

	Rotation direction of RV204
When smaller than specified value	Clockwise (↻)
When larger than specified value	Counterclockwise (↺)

Table 9-1.

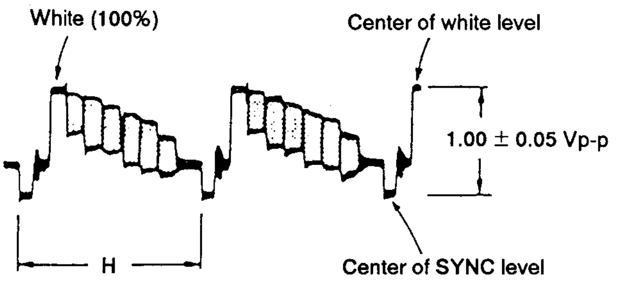

White (100%)
Center of white level
1.00 ± 0.05 Vp-p
H
Center of SYNC level

Fig. 9-18. Y FM deviation adjustment

9-4-11. Chroma Emphasis fo Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Center terminal of RV208 (REC C)
Measuring Instrument	Oscilloscope
Adjustment Element	FL202
Specified Value	Minimum fo component

Adjustment method:
1) Adjust with FL202 so that amplitude of the flat section of the chroma signal REC section becomes minimum.

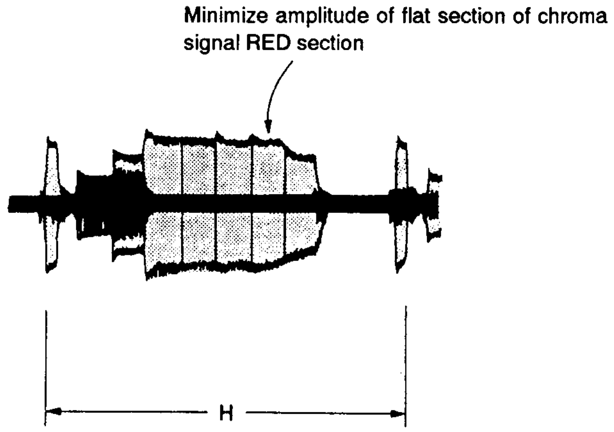

Minimize amplitude of flat section of chroma signal RED section
H

Fig. 9-19. Chroma emphasis fo adjustment

9-4-12. REC Y Level Adjustment (CV-9 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q230 (Pin ⑯ of CN502)
Measuring Instrument	Oscilloscope
Adjustment Element	RV207
Specified Value	230 ± 10 mVp-p

Adjustment method:
1) Adjust with RV207 so that it becomes 230 ± 10 mVp-p.

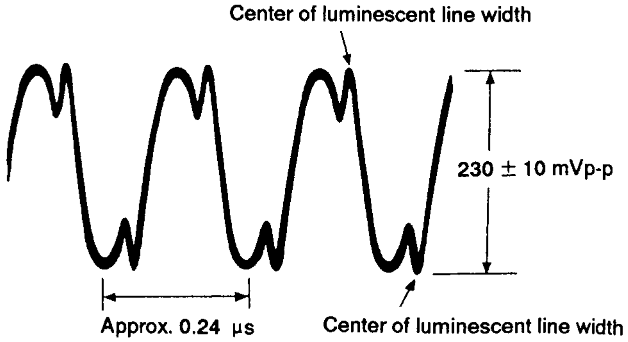

Center of luminescent line width
230 ± 10 mVp-p
Approx. 0.24 μs
Center of luminescent line width

Fig. 9-20. REC Y Level Adjustment

9-4-13. REC C Level Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Emitter of Q233 (Pin ⑱ of CN502)
Measuring Instrument	Oscilloscope
Adjustment Element	RV208
Specified Value	110 ± 10 mVp-p

Adjustment method:

1) Adjust with RV208 so that it becomes 110 ± 5 mVp-p.

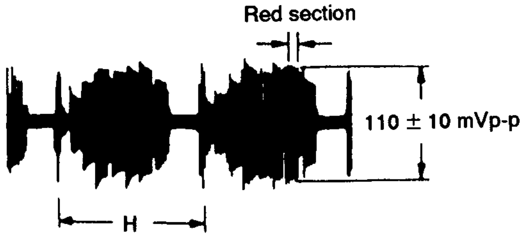


Fig. 9-21. REC C level adjustment

9-4-14. Feedback Chroma Adjustment (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	Emitter of Q107
Measuring Instrument	Oscilloscope
Adjustment Element	RV104

Adjusting method:

1) Adjust RV104 so as to mininize the residual chroma component.

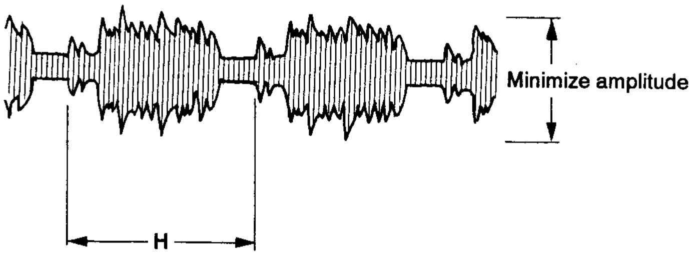


Fig. 9-22.

9-4-15. Quasi Burst Phase Adjustment(PJ-20 Board)

1. Method using vectorscope

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV902
Specified Value	Phase of color luminance points in quasi burst mode is same as phase of color luminance points in through burst mode

Adjusting method:

1) Memorize of the phase of the color luminance points (especially yellow). (Through burst mode)
2) Connect Pin ㉑ of IC101 and Pin ② of CN202 with a diode (1SS119, etc.). (Quasi burst mode)

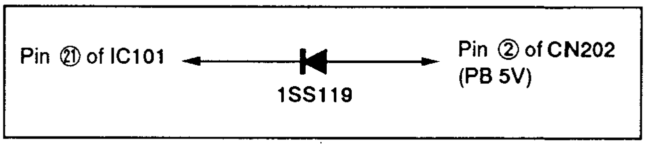


Fig. 9-23.

3) Confirm the color of color bars on the monitor screen. If abnormal, stop the unit and then set the playback mode again.
4) Adjust RV102 so that the phase of the color luminance points is the same as the phase memorized in 1).
5) Remove the diode.

2. Method using monitor TV

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV902
Specified Value	Minimum chroma flickering

Connection:
1) Connect Pin ㉑ of IC101 and Pin ② of CN502 on CV-9 board (RF SWP) using a diode (1SS119, etc.).

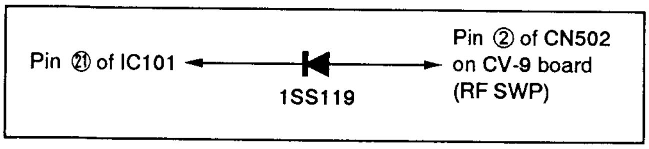


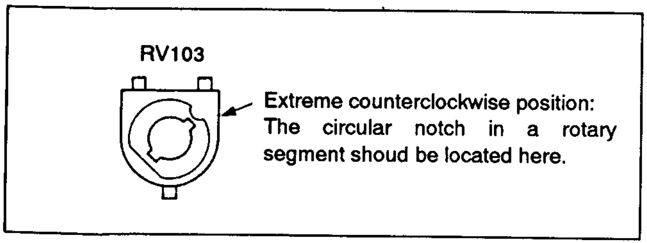
Fig. 9-24.

Adjusting method:
1) Observe the monitor screen. If color is abnormal and considerable chroma flicker occurs, stop the unit and then set the playback mode again.
2) Set the monitor color level to maximum and its bright V-level to minimum.
3) Minimize chroma flicker with RV102 so that horizontal black stripes cannot longer be seen.
4) Remove the diode.

9-4-16. Delay Burst Phase Adjustment (PJ-20 Board)

Mode	Playback pause (LP mode)
Signal	Alignment tape: For operation checking (WR5-4CL) color bars
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV103
Specified Value	Minimum chroma flickering

Adjusting method:
1) Set the monitor color level to maximum and its bright level to minimum.
2) Rotate RV903 fully in the counterclockwise direction(○).
3) Turn RV103 slowly clockwise and stop where chroma flicker is minimum and horizontal black stripes are least visible.



Extreme counterclockwise position: The circular notch in a rotary segment shoud be located here.

Fig. 9-25.

9-4-17. DDS Character Position Adjustment (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP) Color bar section
Measurement Point	Confirm on monitor TV screen
Measuring Instrument	
Adjustment Element	CV501
Specified Value	See Fig. 9-26.

Adjustment method:
1) Press the data screen button for indication of the counter on the monitor TV screen.
2) Adjust CV501 until the right inner contour of the number at the right side of the count indication is lined up with the border line between the blue and black color bars.

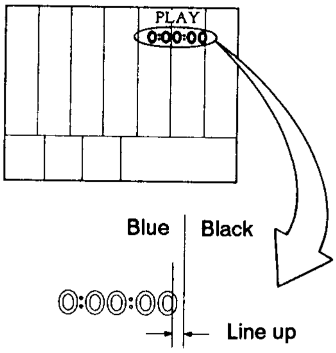


Fig. 9-26.

9-4-18. Character Generator fo Adjustment (CV-9 Board)

Mode	E-E
Signal	Non-signal
Measurement Point	Pin ⑲ of IC501
Measuring Instrument	Frequency counter
Adjustment Element	CV502
Specified Value	15625 ± 100 Hz

Adjustment method:
1) Adjust CV502 so that it becomes 15625 ± 100 Hz.

9-5. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

[Connection of audio measuring instruments]

In addition to the video system measuring instruments, connect the audio system measuring instruments as shown in the figure below, and set the power switch to the video position for adjustment.

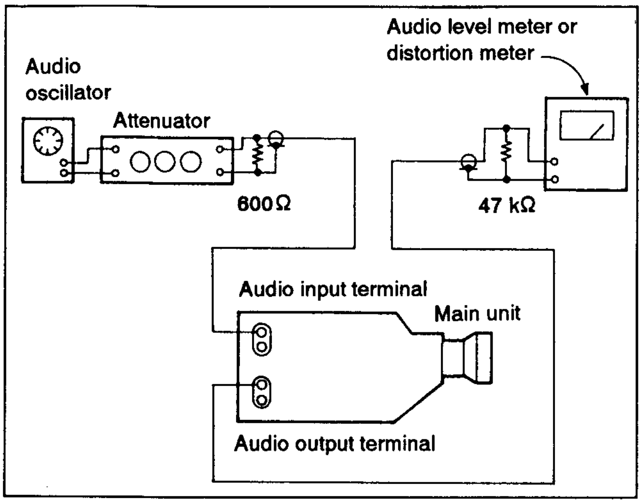
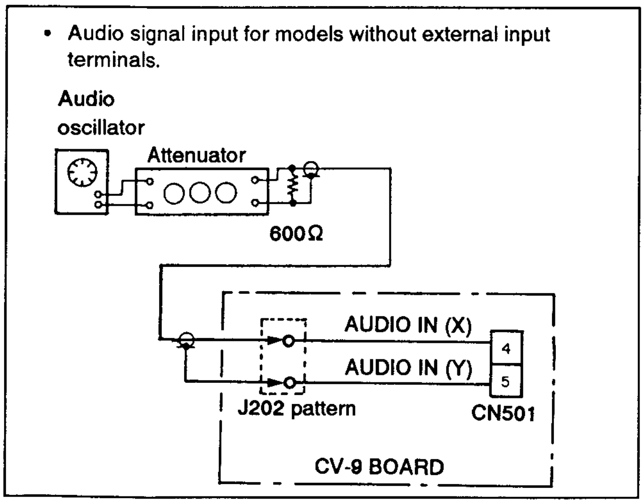

Audio level meter or distortion meter
Audio oscillator
Attenuator
600Ω
47 kΩ
Audio input terminal
Main unit
Audio output terminal

Fig. 9-27.


- Audio signal input for models without external input terminals.

Audio oscillator
Attenuator
600Ω
AUDIO IN (X)
AUDIO IN (Y)
4
5
J202 pattern
CN501
CV-9 BOARD

Fig. 9-28.

9-5-1. AFM Carrier Frequency Check (CO-2P Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ㉑ of IC401(REC AFM)
Measuring Instrument	Frequency counter
Specified Value	1.50 ± 0.05 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

Checking method:

1) Turn OFF the audio oscillator output.
2) Confirm that the AFM carrier frequency is 1.50 ± 0.05 MHz.

9-5-2. REC AFM Carrier Level Adjustment (CO-2P Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ㉑ of IC401 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	160 ± 5 mVp-p

Checking method:

1) Confirm that the level is 160 ± 5 mVp-p.

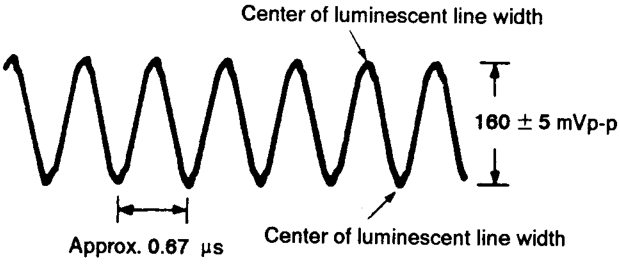

Center of luminescent line width
160 ± 5 mVp-p
Approx. 0.67 µs
Center of luminescent line width

Fig. 9-29. REC AFM recording current adjustment

9-5-3. Playback Level Check

Mode	Playback
Signal	Alignment tape: Operation checking (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	-7.5 ± 2 dBs

Checking method:

1) Confirm that the audio output level is -7.5 ± 2 dBs.

9-5-4. E-E Output Level Check

Mode	E-E
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:

1) Make sure that the audio output level is –7.5 ± 2 dBs.

9-5-5. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3 dBs

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Make sure that the audio output level is –7.5 ± 3 dBs.

9-5-6. Overall Frequency Characteristics Check

Mode	Self-recording and playback
Signal	Ⓐ 400 Hz, –17.5 dBs Ⓑ 30 Hz, –17.5 dBs Ⓒ 10 Hz, –17.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	With the 400 Hz playback output level as 0 dB, the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB

Checking method:

1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400 Hz playback output level as 0 dB, confirm that the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB.

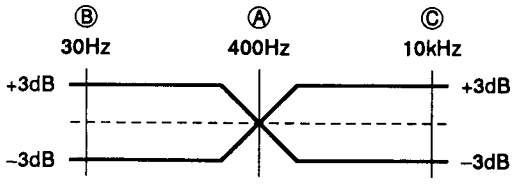


Fig. 9-30. AFM overall frequency characteristics

9-5-7. Overall Distortion Check

Mode	Self recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5% *1

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.5%. *1

*1 Value when 200 Hz – 6 kHz BPF is used

9-5-8. Overall Noise Level Check

Mode	Self-recording and playback
Signal	No signal (shorting plug is inserted into audio input jack)
Measurement Point	Audio input terminal
Measuring Instrument	Audio level meter
Specified Value	Less than –67 dBs*2

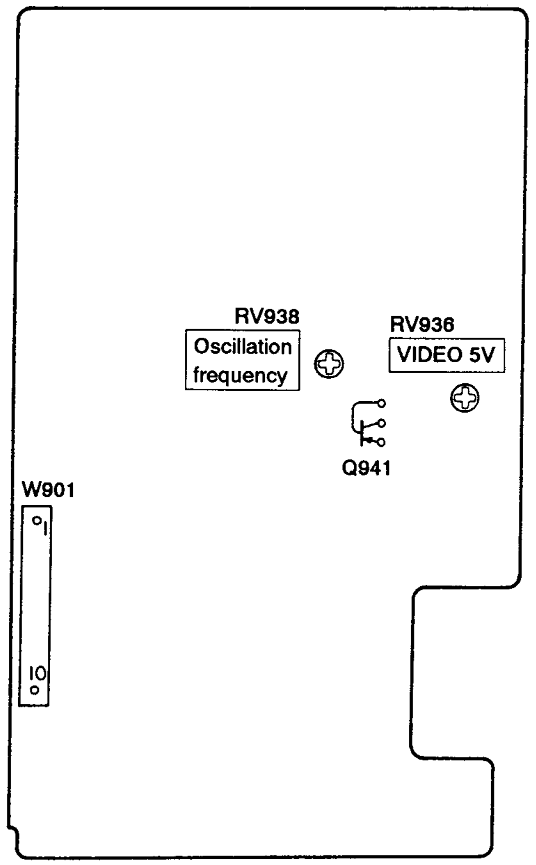
Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Make sure that the noise level is less than –67 dBs. *2

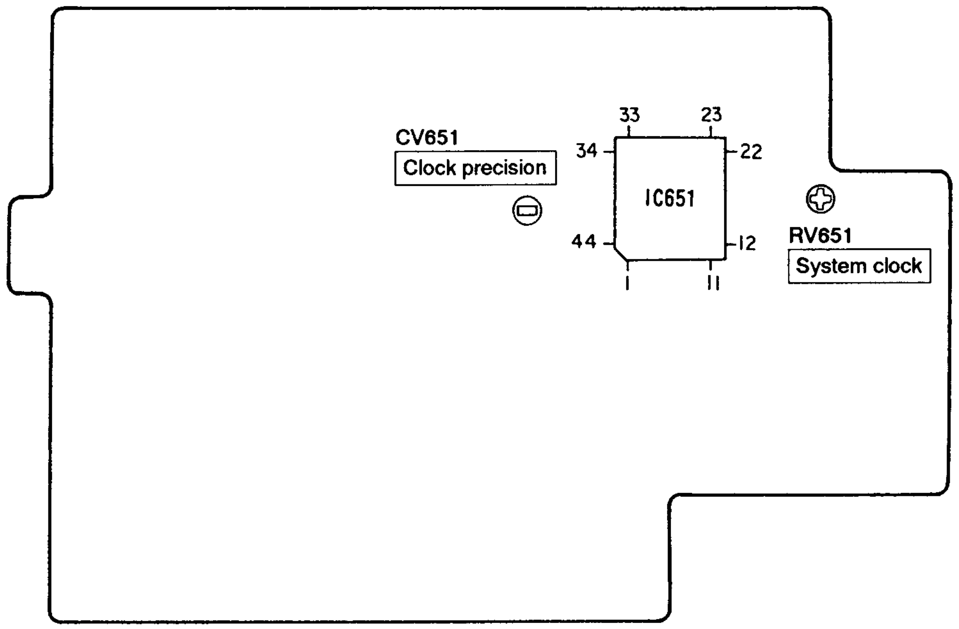
*2 Value when HF-A hearing correction filter is used.

9-6. ADJUSTMENT ELEMENTS LOCATION

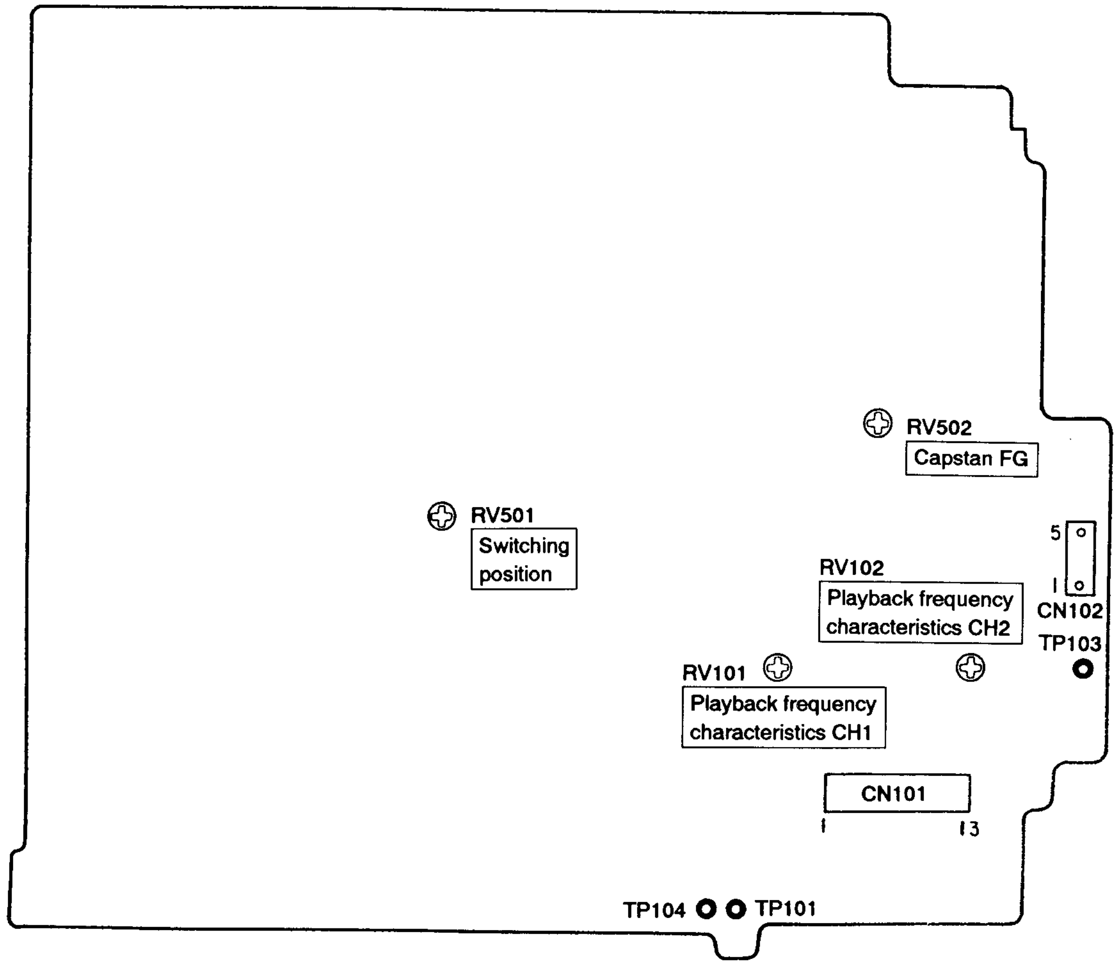
PS-180P BOARD (COMPONENT SIDE)


RV938
Oscillation frequency
RV936
VIDEO 5V
Q941
W901
1
10

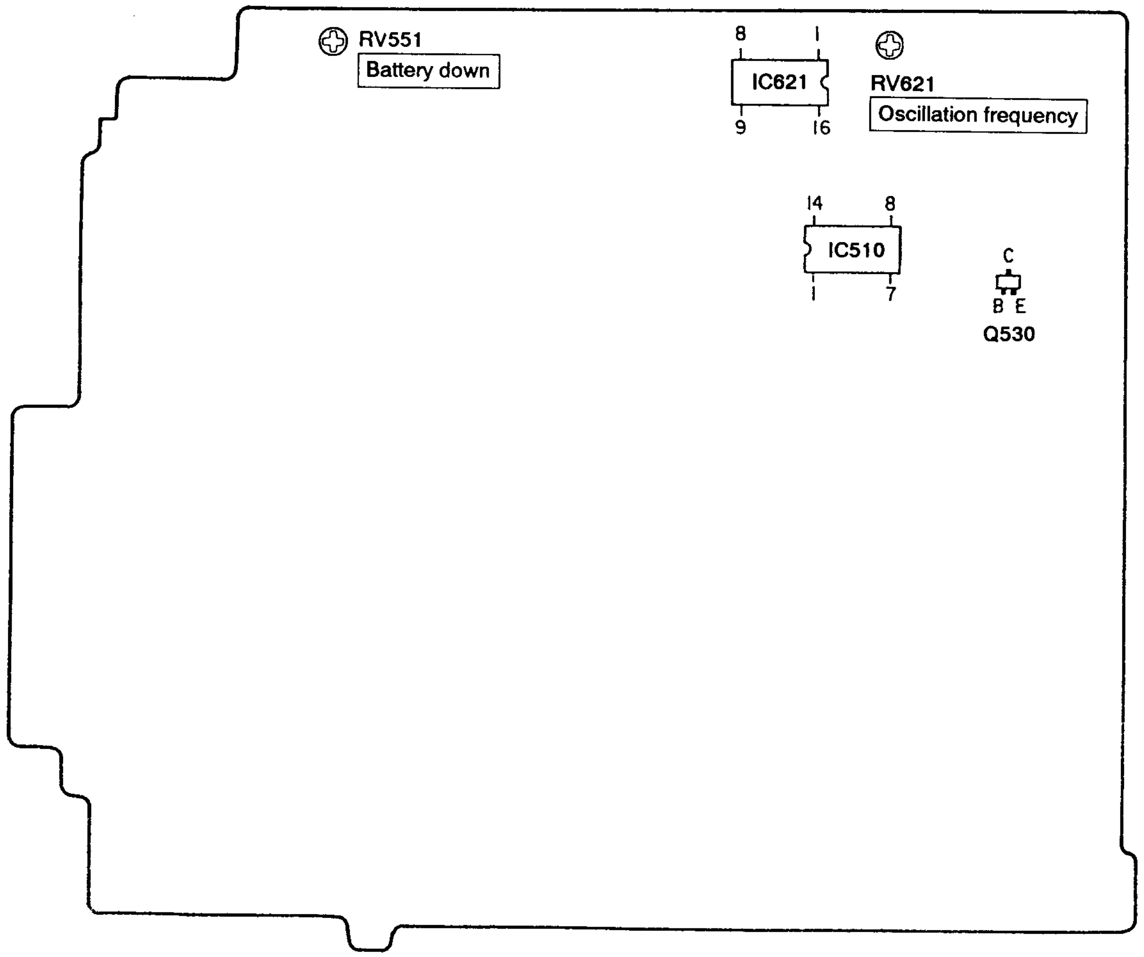
CK-8P BOARD (COMPONENT SIDE)


CV651
Clock precision
33
23
34
22
IC651
44
12
1
11
RV651
System clock

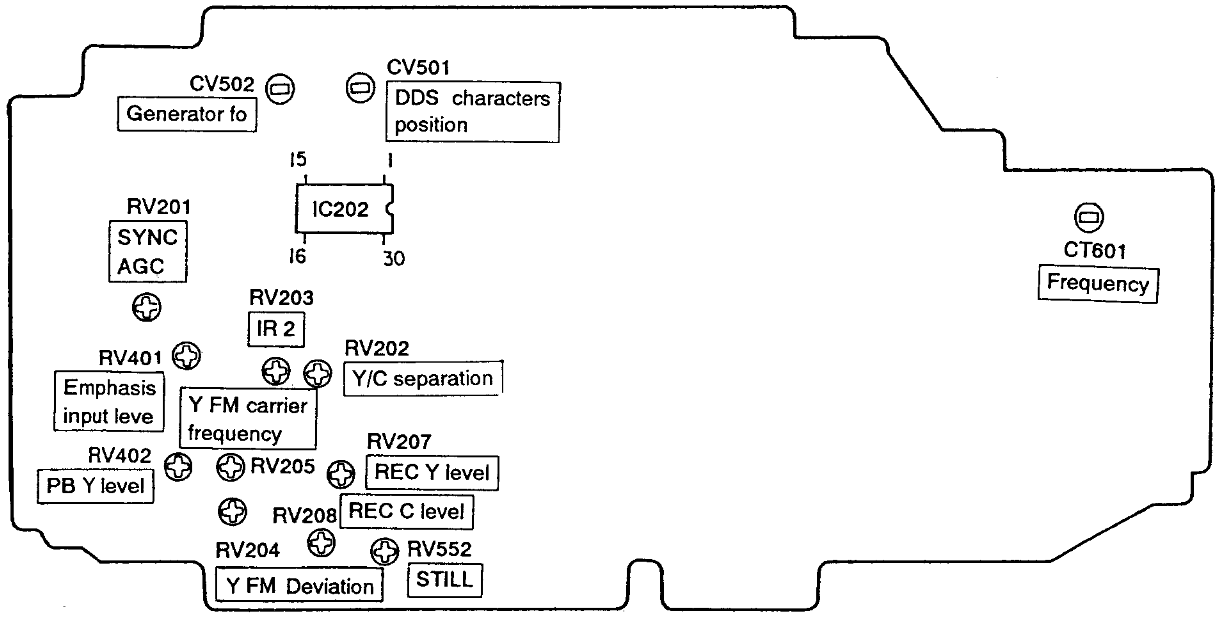
CO-2P BOARD (CONDUCTOR SIDE)


RV502
Capstan FG
RV501
Switching position
5
1
CN102
RV102
Playback frequency characteristics CH2
TP103
RV101
Playback frequency characteristics CH1
CN101
1
13
TP104
TP101

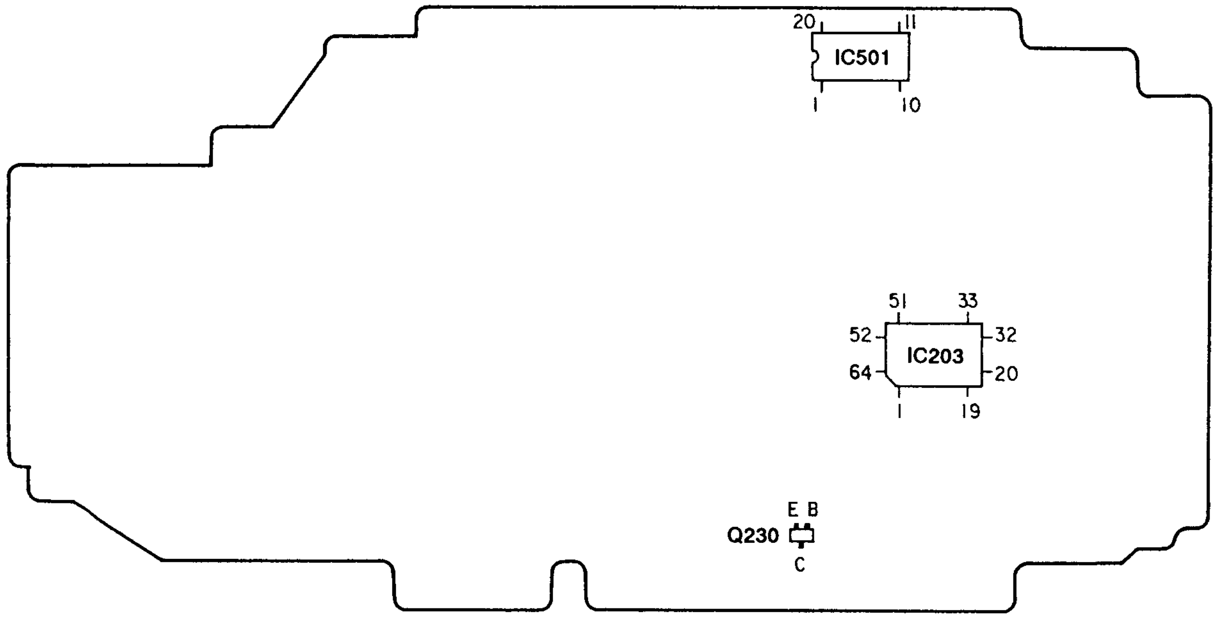
CO-2P BOARD (COMPONENT SIDE)


RV551
Battery down
8
1
IC621
9
16
RV621
Oscillation frequency
14
8
IC510
1
7
C
B E
Q530

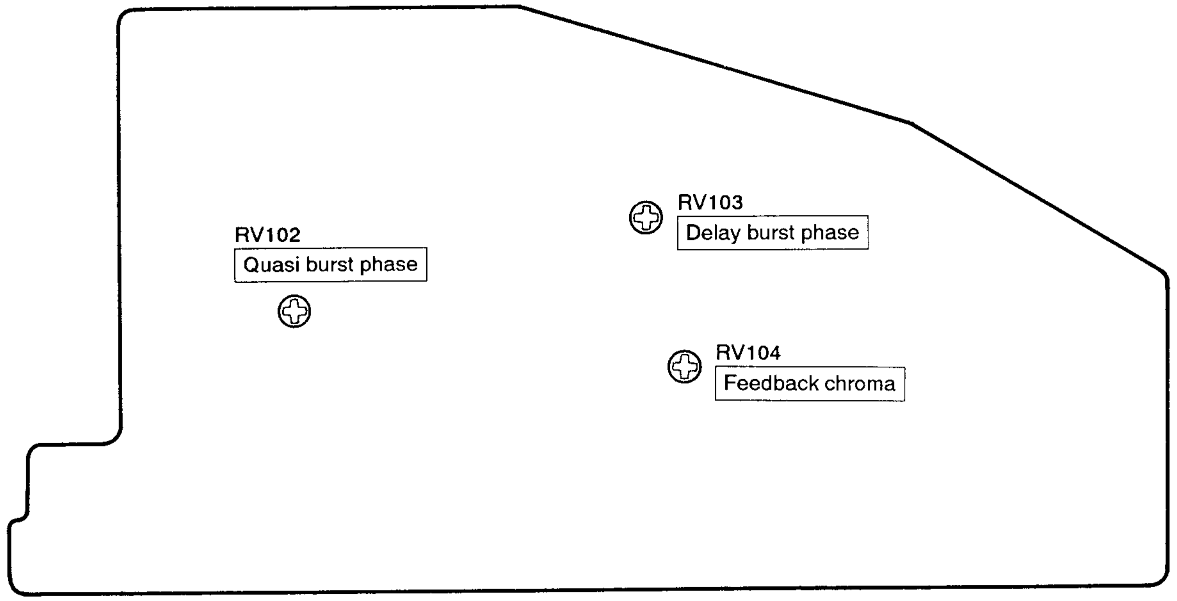
CV-9 BOARD (COMPONENT SIDE)


CV502
Generator fo
CV501
DDS characters position
15
1
IC202
16
30
RV201
SYNC AGC
RV203
IR 2
RV401
Emphasis input leve
Y FM carrier frequency
RV202
Y/C separation
RV402
PB Y level
RV205
RV207
REC Y level
RV208
REC C level
RV204
Y FM Deviation
RV552
STILL
CT601
Frequency

CV-9 BOARD (CONDUCTOR SIDE)


20
11
IC501
1
10
51
33
52
32
IC203
64
20
1
19
E B
Q230
C

PJ-20 BOARD (COMPONENT SIDE)

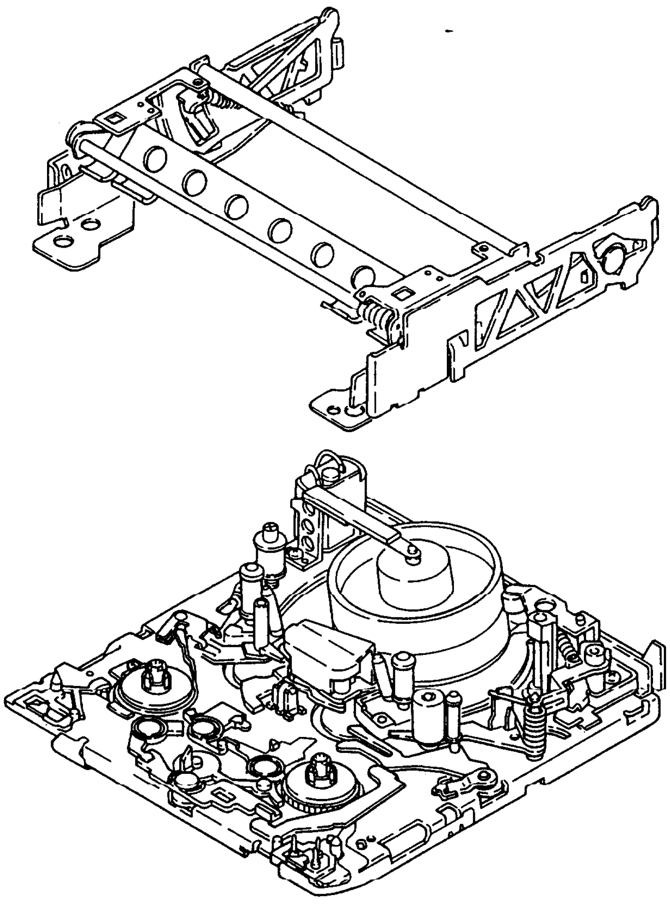

RV102
Quasi burst phase
RV103
Delay burst phase
RV104
Feedback chroma

mm Video MECHANICAL ADJUSTMENT MANUAL III

U MECHANISM

Video 8

Please use in conjunction with the SERVICE MANUAL.



8 MECHANISM DECK

SONY®

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1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Note: For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

Note: The unit will not work if exposed to a strong light.

1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

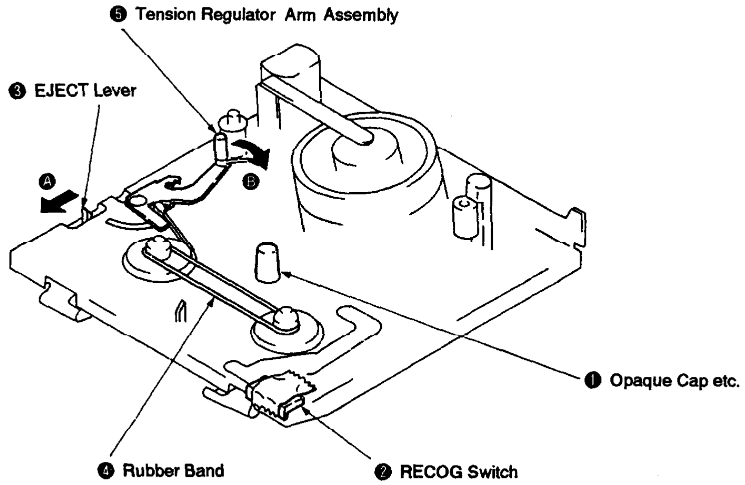


Fig. 1-1.

1-2. THE MODE SELECTOR

1-2-1. Name of Each Part (external) (See Fig. 1-2.)

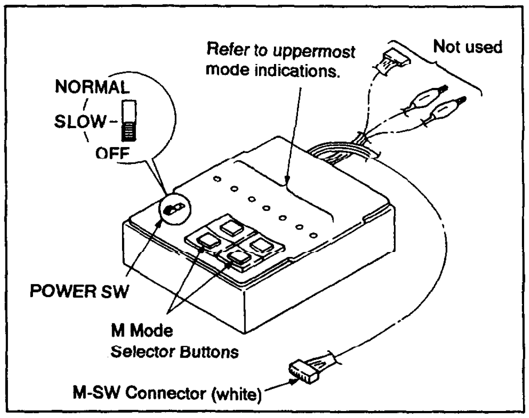

Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.

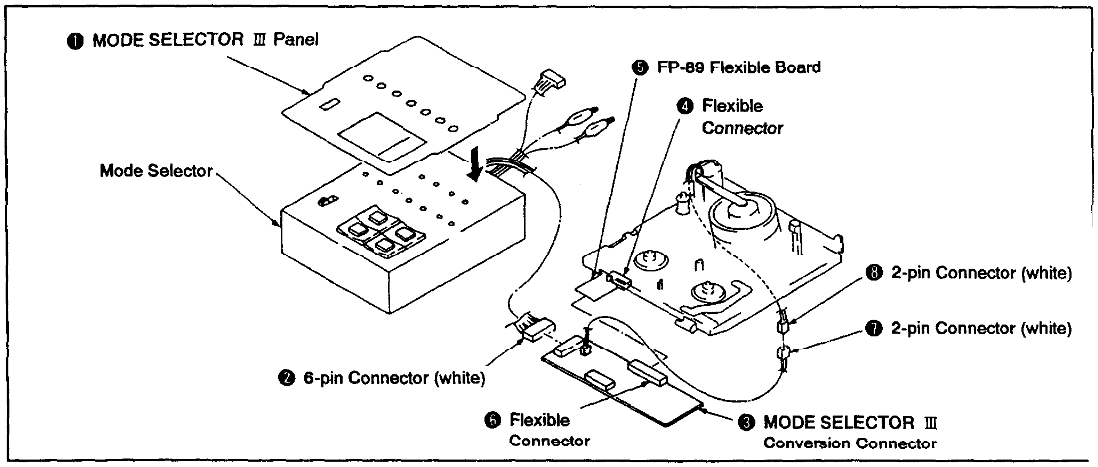

❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❷ 6-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

Note: For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.

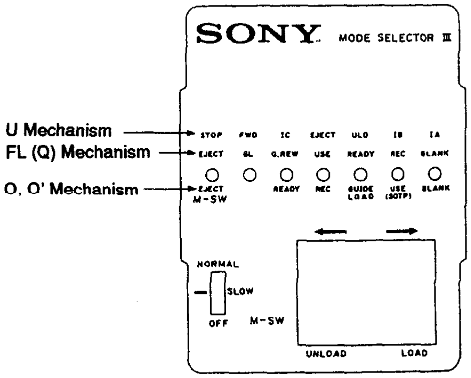

SONY MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
GL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (SOTP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

Note: Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

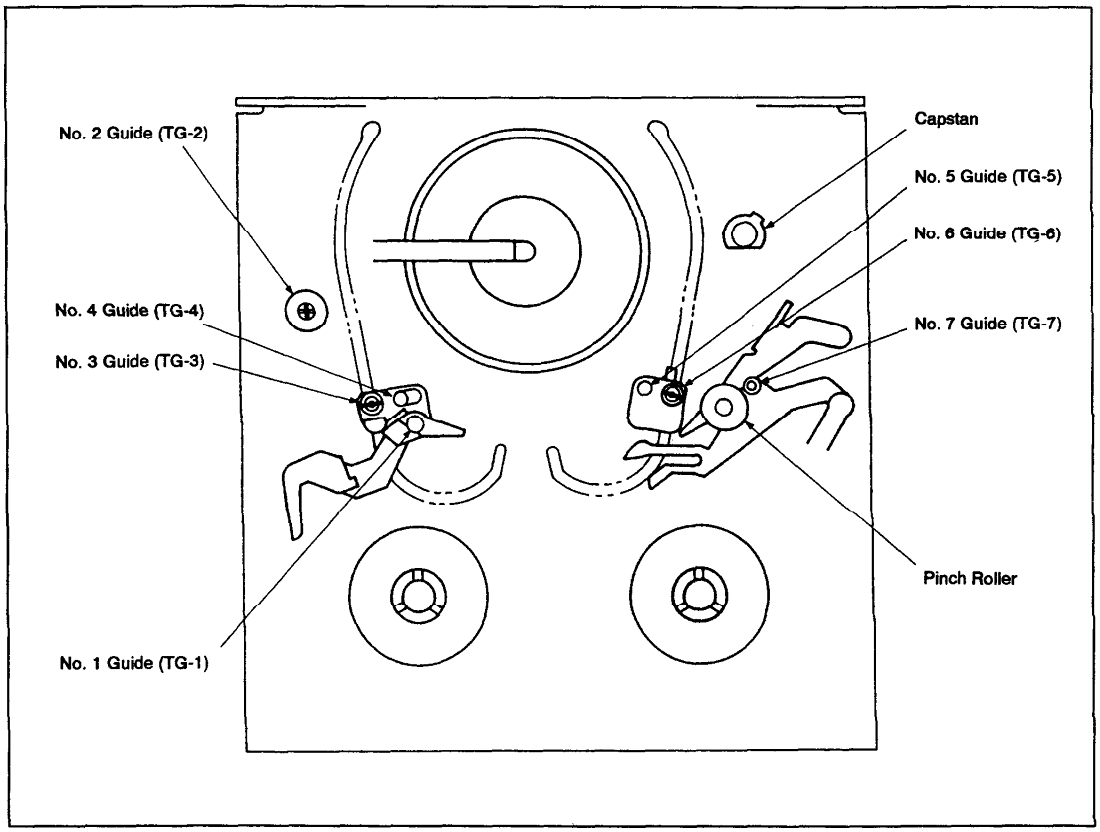


Fig. 2-1.

2-4. PERIODICAL CHECK ITEMS

○Cleaning ◎Lubrication ☆Check

Maintenance and Check Item		Operation time (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demag-netizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Do not oil.
	Rotary drum assembly cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Do not oil.
Drive System	Relay belt (short)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-866-01
	Relay belt (long)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-865-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Take care that no oil gets on tape path surfaces.
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	1-541-612-11
Perfor-mance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

Notes: When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

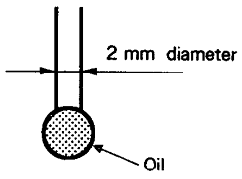


Fig. 2-2.

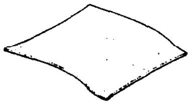
2-5. SERVICING TOOLS

Ref. No.	Name	Part Code	Marking	Application, etc.
J-1	Cleaning fluid	Y-2031-001-0	–	
J-2	Chamois cloth	2-034-697-00	–	
J-3	Head demagnetizer	Commercially available	–	
J-4	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-6	FWD/RVS takeup torque cassette	J-6080-624-A	GD-2086	
J-7	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-8	Mode selector III conversion connector	J-6082-021-A		General
J-9	Mode selector III panel	J-6082-023-A		General
J-10	Mode selector	J-6080-825-A		General
J-11	Hexagonal wrench detection (0.89 mm) or L wrench (0.89 mm)	7-700-766-01 7-700-736-06		Tape path
J-12	Sony grease (SGL-701)	7-662-010-08		

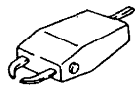
Other devices: Oscilloscope
Analog tester (20 kΩ)

J-1

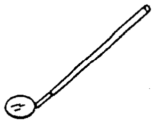
J-2



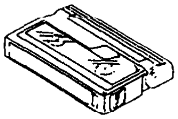
J-3



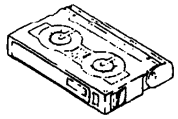
J-4



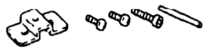
J-5



J-6

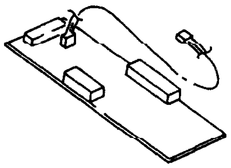


J-7

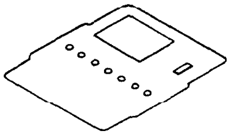


(Attached to the maintenance rotary upper drum)

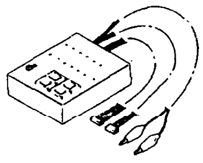
J-8



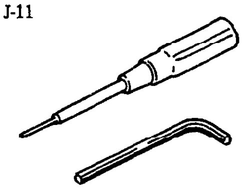
J-9



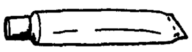
J-10



J-11



J-12



3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Notes:
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame ☐ are those set by pressing the buttons of the mode selector.

3-1. HC ROLLER ASSEMBLY

1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.

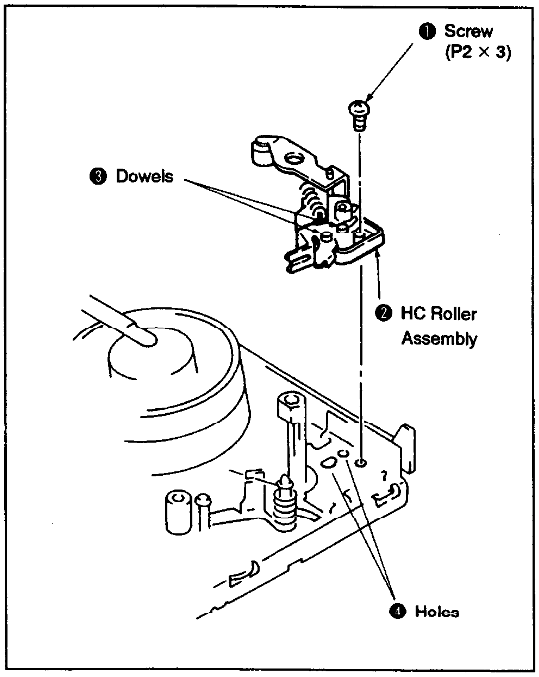

❶ Screw
(P2 × 3)
❸ Dowels
❷ HC Roller
Assembly
❹ Holes

Fig. 3-1.

3-2. GUIDE GUARD ASSEMBLY

1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.

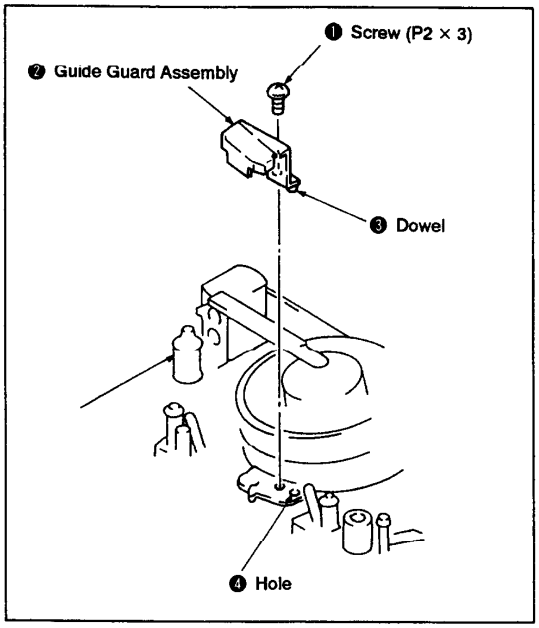

❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

1. Removal (See Fig. 3-3.)

1) Set the $\boxed{\text{ULD}}$ mode.
2) Turn the stopper ❶ in the direction of the arrow Ⓐ as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow Ⓑ as far as it will go.

Note:
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

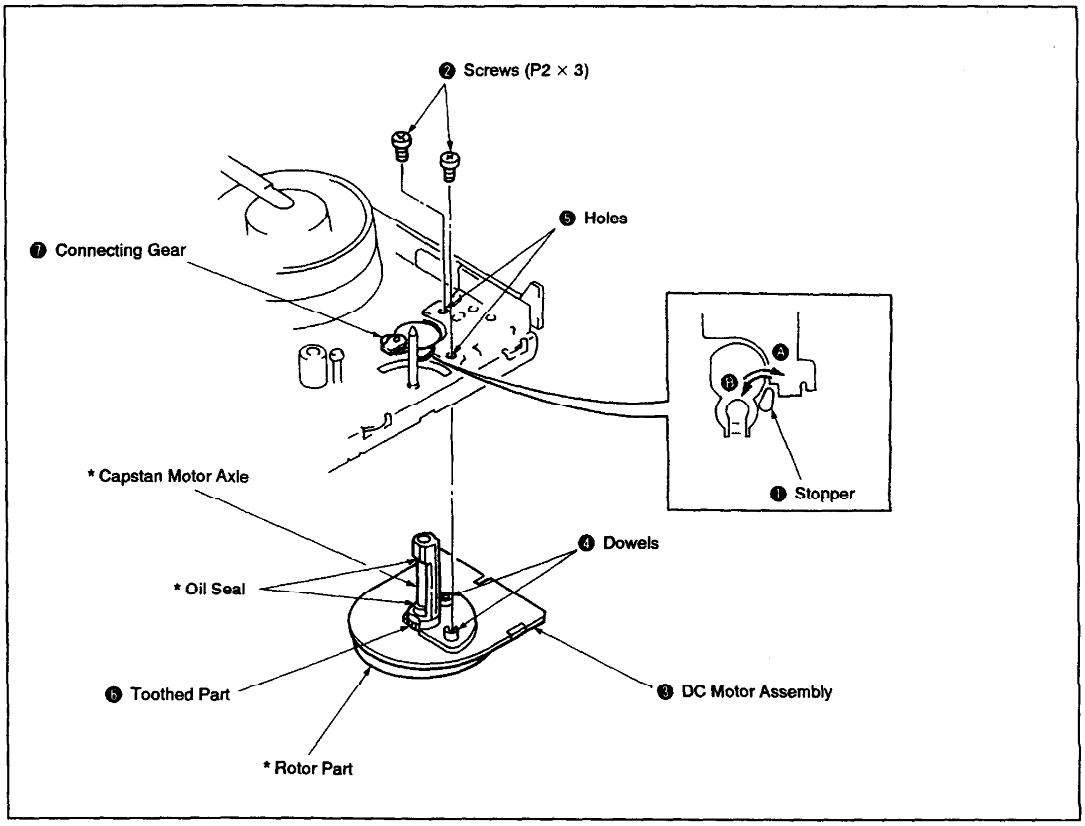

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
Ⓐ
Ⓑ
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

3-4. S BRAKE, T BRAKE

1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ❶.
2) Remove the axle holding pin ❷, then remove the T brake ❸.
3) Remove the axle holding pin ❹, then remove the S brake ❺.

2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ❻ into the notch ❼, mount the S brake ❺.
2) Insert the axle holding pin ❹.
3) Insert the axle ❽ to the S reel side of the brake release arm ❾ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ❸.
4) Insert the axle holding pin ❷.
5) Insert the torsion coil spring (ST) ❶ below the claw ⓫ of the axle ❿, then hook it to two claws ⓬.

Note: Confirm that the claws of axle holding pins ❷ and ❹ are not broken before assembling.

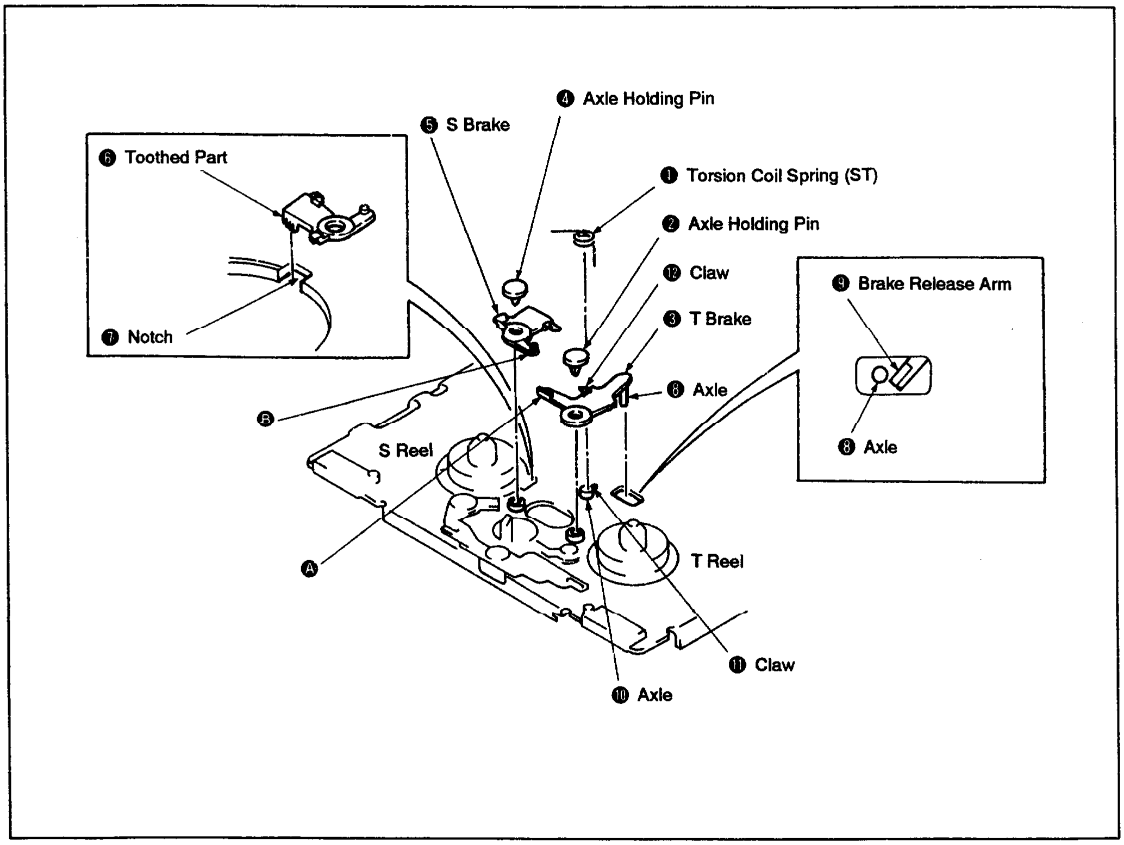

❹ Axle Holding Pin
❺ S Brake
❻ Toothed Part
❼ Notch
❶ Torsion Coil Spring (ST)
❷ Axle Holding Pin
⓬ Claw
❸ T Brake
❾ Brake Release Arm
❽ Axle
Ⓑ
S Reel
❽ Axle
Ⓐ
T Reel
⓫ Claw
❿ Axle

Fig. 3-4.

3-5. LB BRAKE, AXLE HOLDING PINS

1. Removal (See Fig. 3-5.)

1) Remove the screw ①, then remove the TL holding plate ②.
2) Remove the axle holding pin ③, then remove the LB brake ④.
3) Remove the axle holding pin ⑤, then remove the LB lever ⑥.

2. Installation (See Fig. 3-5.)

1) Mount the LB lever ⑥ matching it to pin ⑦ of the LB gear, then secure it with the axle holding pin ⑤.
2) Insert the pin ⑧ into the notch ⑨ of the LB lever ⑥, then mount the LB brake ④ while inserting the toothed part ⑩ into the notch ⑪.
3) Insert the axle holding pin ③.
4) Align the dowel ⑫ with the hole ⑬, then mount the TL holding plate and secure it with the screw ①.

Note: Confirm that the claws of axle holding pins ③ and ⑤ are not broken before assembling.

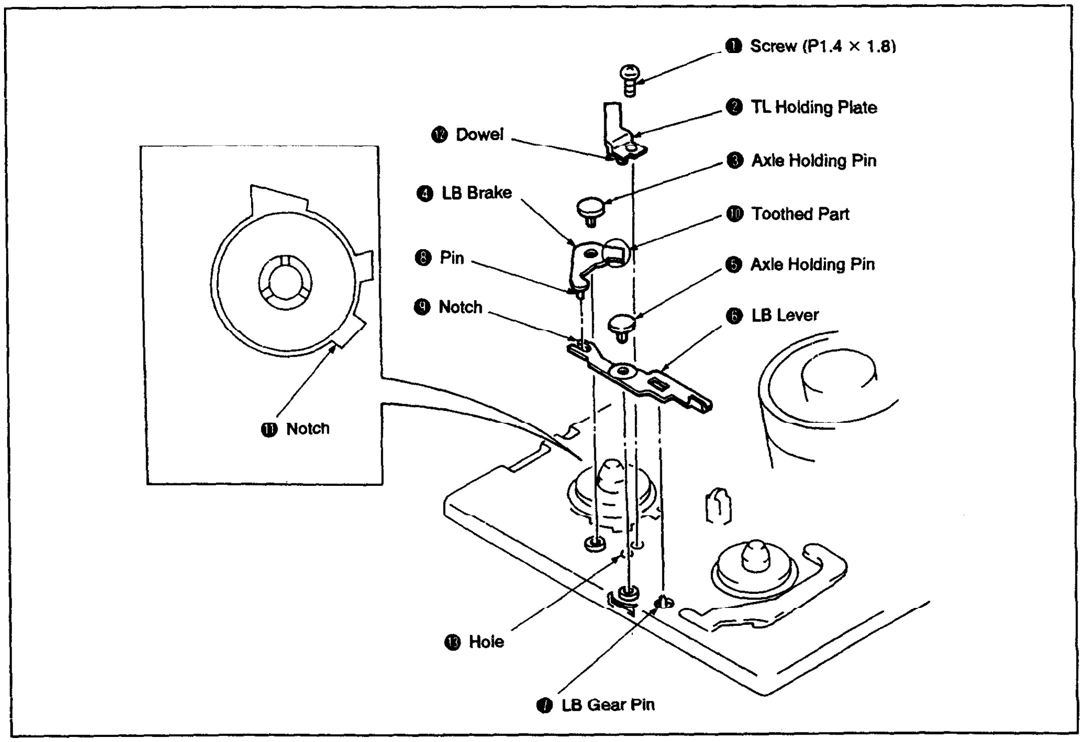

① Screw (P1.4 × 1.8)
② TL Holding Plate
⑫ Dowel
③ Axle Holding Pin
④ LB Brake
⑩ Toothed Part
⑧ Pin
⑤ Axle Holding Pin
⑨ Notch
⑥ LB Lever
⑪ Notch
⑬ Hole
⑦ LB Gear Pin

Fig. 3-5.

3-6. LB RELEASE ARM

1. Removal (See Fig. 3-6.)

1) While pushing the claw ❶ in the direction of the arrow, remove the LB release arm ❷.

2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ❷ to the axle ❸, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ❹, then secure with the claw ❶.

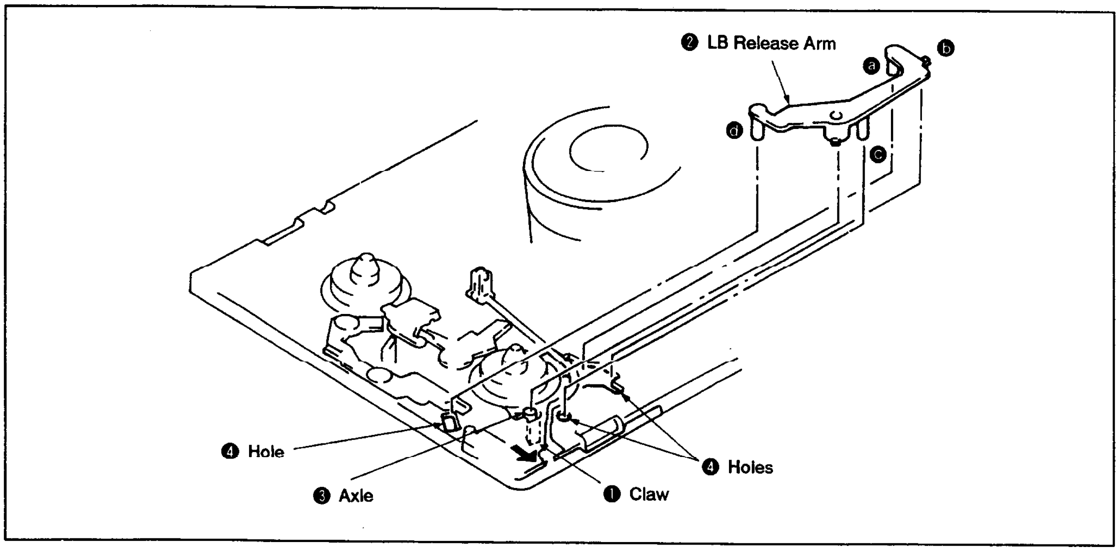

❷ LB Release Arm
ⓑ
ⓐ
ⓓ
ⓒ
❹ Hole
❸ Axle
❶ Claw
❹ Holes

Fig. 3-6.

3-7. RK STOPPER, RK STOPPER ARMS

1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ❶.
2) Open the chassis claw ❷, then remove the RK stopper arm ❸.
3) Remove the RK stopper ❹.

2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ❹ onto the axle ❺.
2) Mount the RK stopper arm ❸ onto the axle ❻, insert Pin ❿ into hole ⓫, then hook the claw ❷ of the chassis to the hole ❼.
3) Insert the torsion coil spring (RK) ❶ into the axle ❺, then hook it to claws ❽ and ❾.

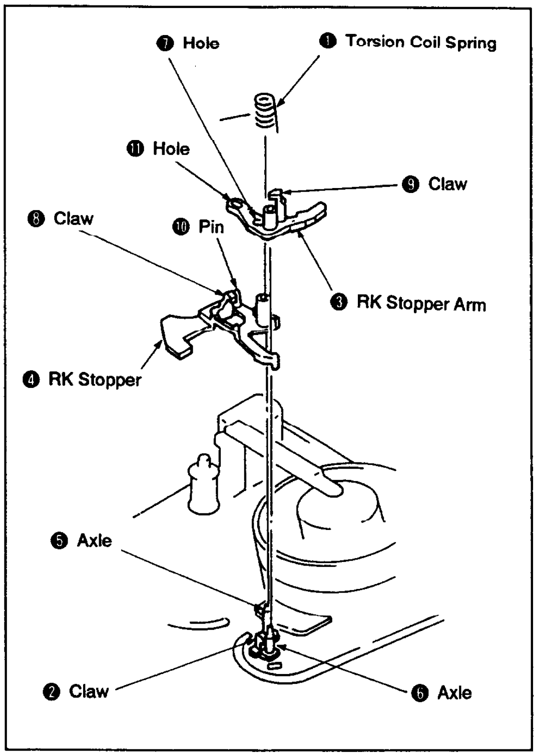

❼ Hole
❶ Torsion Coil Spring
⓫ Hole
❾ Claw
❽ Claw
❿ Pin
❸ RK Stopper Arm
❹ RK Stopper
❺ Axle
❷ Claw
❻ Axle

Fig. 3-7.

3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

1. Removal (See Fig. 3-8.)

1) Set the $\boxed{\text{IB}}$ mode.
2) Remove the stopper washer ❶, then remove the pinch arm assembly ❷.
3) Bend the claw ❹ inside hole ❸ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ❺.
4) Remove the TG-7 arm assembly ❻.

2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ❼ (See Fig. A).
2) Insert the axle ❽ of the TG-7 arm assembly ❻ into the hole ❼.
3) Grease the shaded section ⓐ (See Fig. A).
4) Insert the TG-7 plate spring ❺ into the hole ❸, then secure it with the claw ❹.
5) Apply half a drop of oil to the axle ❾ (See Fig. B).
6) Fit the pinch arm assembly ❷ to the axle ❾ and insert the pinch roller sub arm assembly tab ❿ into the ⓑ part.
7) Install the stopper washer ❶.

Note:
- Take care not to grease the screw ⓫ of the TG-7 arm assembly ❻ (See Fig. A).
- When fitting the pinch arm assembly ❷ to the axle ❾, make sure that it does not touch the TG-7 guide ⓬ or the rubber roller ⓭.
- After assembling, be sure to perform tape path adjustment as described in section 4.

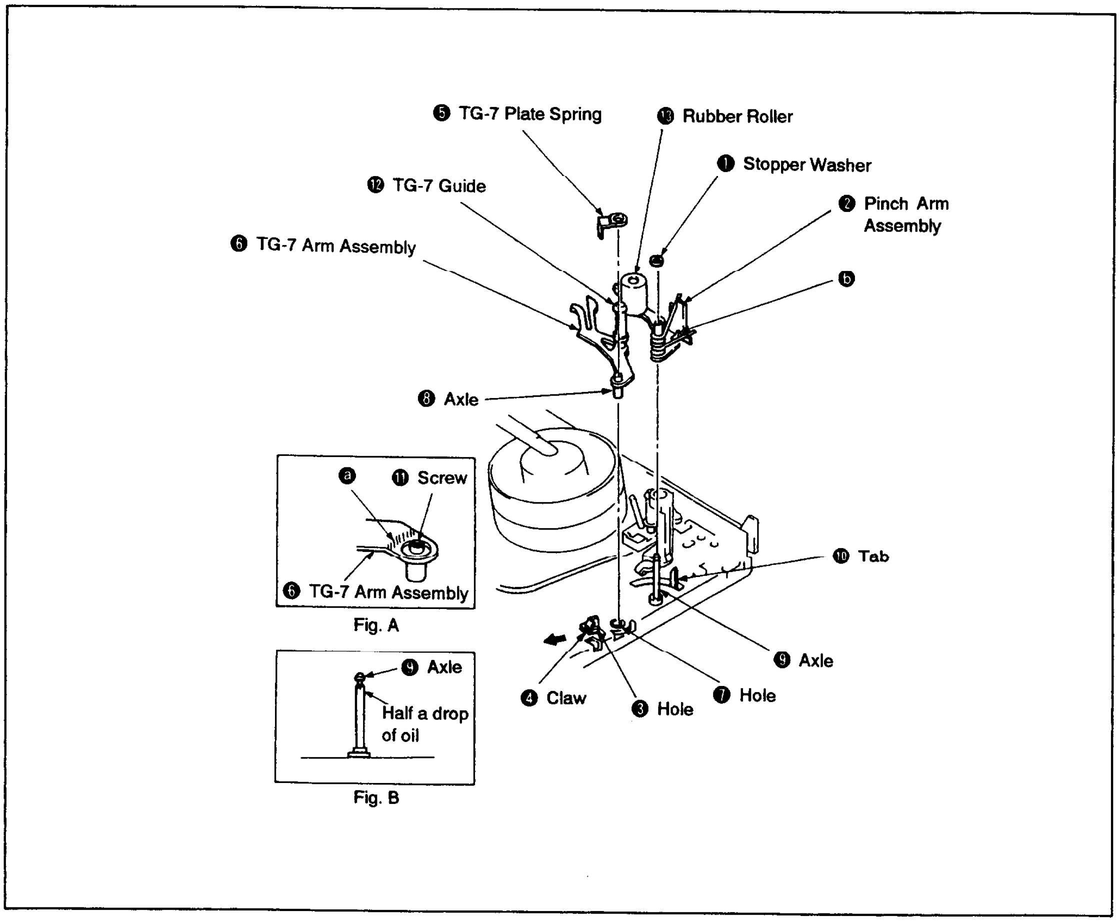

❺ TG-7 Plate Spring
⓭ Rubber Roller
❶ Stopper Washer
⓬ TG-7 Guide
❷ Pinch Arm Assembly
❻ TG-7 Arm Assembly
ⓑ
❽ Axle
ⓐ
⓫ Screw
❻ TG-7 Arm Assembly
Fig. A
❿ Tab
❾ Axle
Half a drop of oil
Fig. B
❾ Axle
❹ Claw
❸ Hole
❼ Hole

Fig. 3-8.

3-9. TG-2 ASSEMBLY

1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

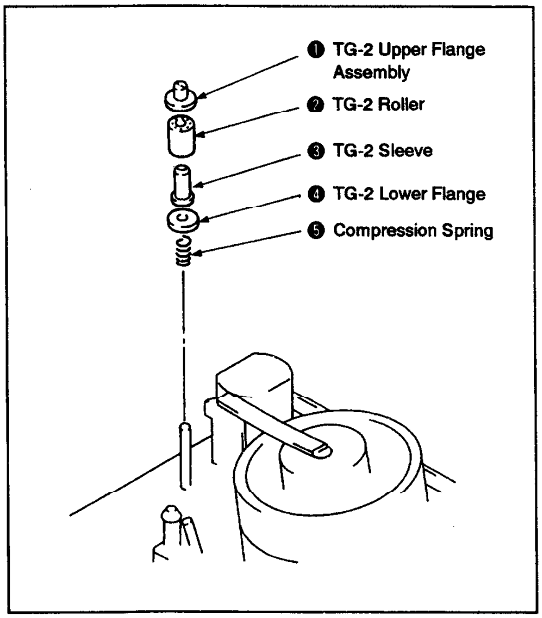

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

Note: After adjustment, be sure to perform tape path adjustment as described in section 4.

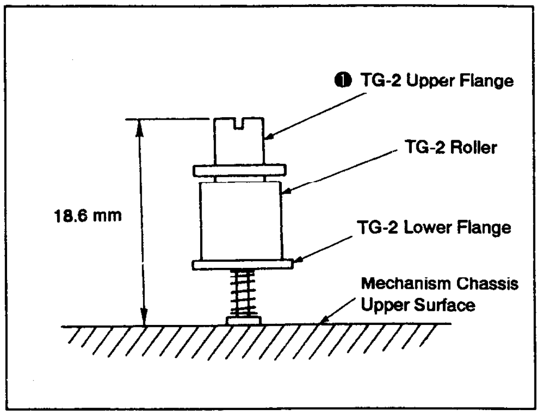

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ❶.
5) Turn the stopper ❷ approx. 90 ° in the direction of the arrow Ⓐ.
6) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, remove the T reel table assembly ❹.

2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ❺ (See Fig. A).
2) Move the RK gear ❻ in the direction of the arrow Ⓒ and the TS brake ❼ in the direction of the arrow Ⓓ, putting them out of the way.
3) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, mount the T reel table assembly ❹ onto the axle ❺, then turn the stopper ❷ in the direction of the arrow Ⓔ as far as it will go.
4) Apply half a drop of oil to the axle ❽ (See Fig. B).
5) Move the RK gear ❻ in the direction of the arrow Ⓕ, the UL brake ❾ in the direction of the arrow Ⓖ and the LB brake ❿ in the direction of the arrow Ⓗ, putting them out of the way.
6) Mount the S reel table ❶ onto the axle ❽.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

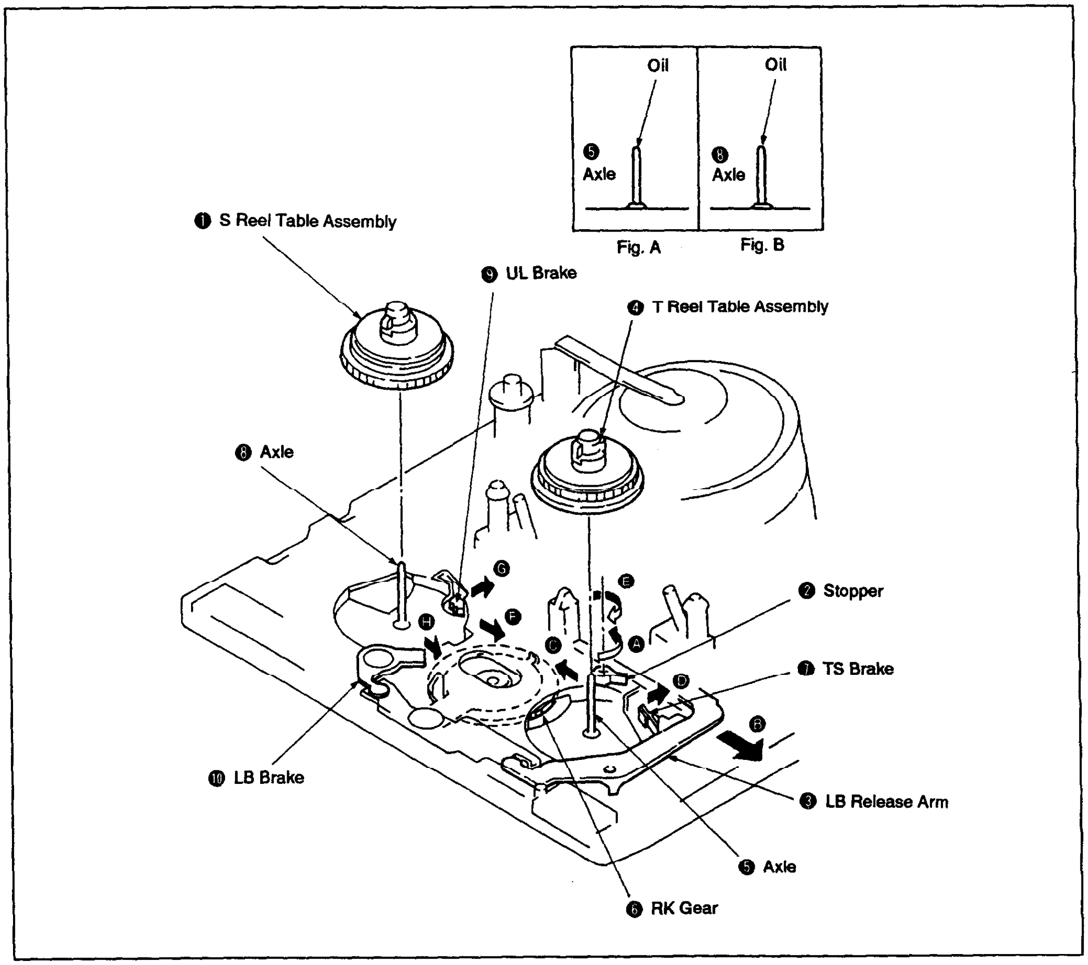

Oil
Oil
❺ Axle
❽ Axle
Fig. A
Fig. B
❶ S Reel Table Assembly
❾ UL Brake
❹ T Reel Table Assembly
❽ Axle
Ⓖ
Ⓔ
❷ Stopper
Ⓕ
Ⓗ
Ⓒ
Ⓐ
Ⓓ
❼ TS Brake
Ⓑ
❿ LB Brake
❸ LB Release Arm
❺ Axle
❻ RK Gear

Fig. 3-11.

3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

1. Removal (See Fig. 3-12.)

1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

Note: When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow Ⓐ side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

Note: When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.

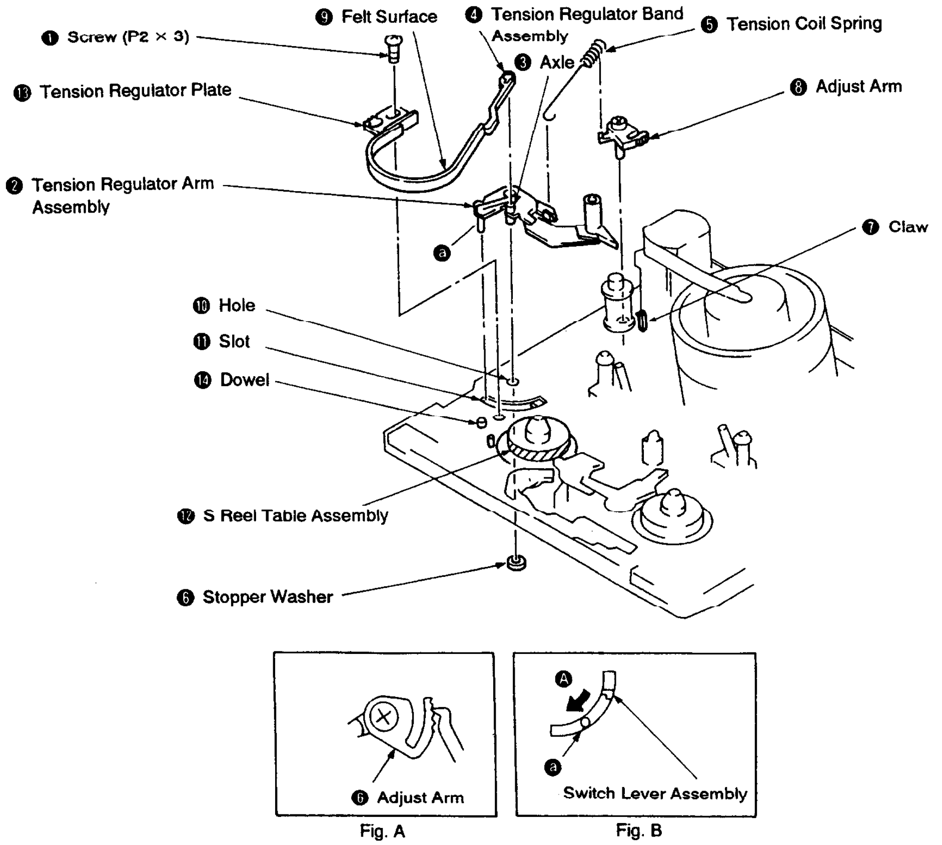

❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❺ Tension Coil Spring
❸ Axle
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
❼ Claw
ⓐ
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer
❻ Adjust Arm
Ⓐ
ⓐ
Switch Lever Assembly

Fig. A

Fig. B

Fig. 3-12.

3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the FWD mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

Note: Use a cassette with the tape advanced halfway.

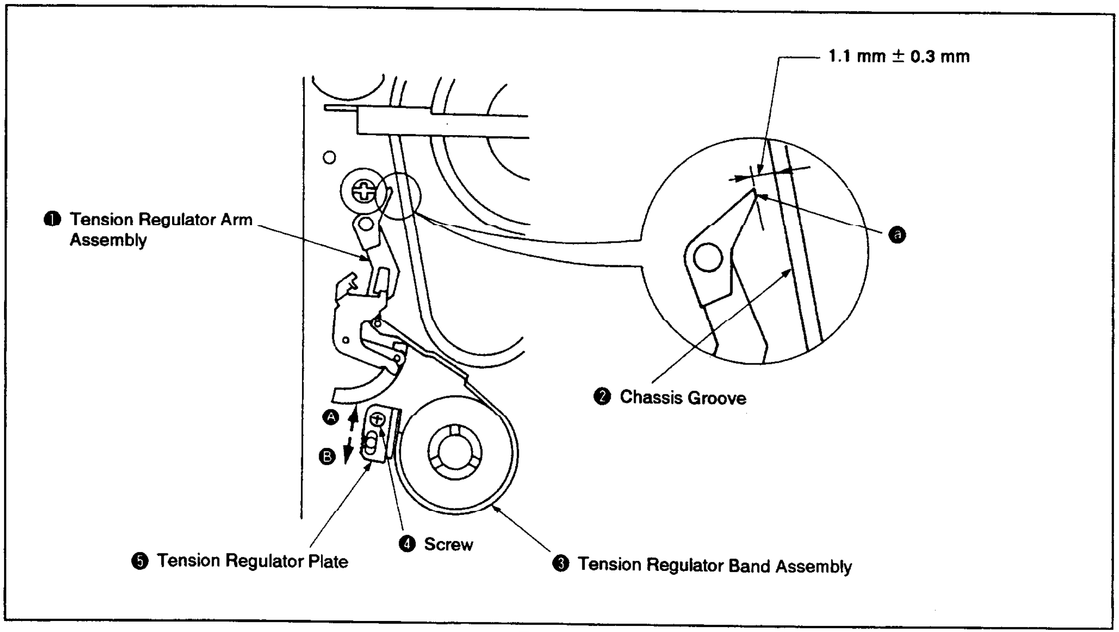

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

3-13. DRUM ASSEMBLY, DEW SENSOR

1. Removal (See Fig. 3-14.)

1) Set the [EJECT] mode.
2) Remove the flexible board ❶ and the two connectors ❷.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ❸, then remove the axle ground terminal ❹.
5) Remove the three screws ❺, then remove the drum assembly ❻ from the mechanism chassis.
6) Remove the connector ❿
7) Remove the screw ❼, then remove the dew sensor ❽.

Note:
- When removing the drum assembly ❻ from the mechanism chassis, take care not to cut the flexible board ❶ or the harness.
- Take care not to touch the head tip ❾.

2. Installation (See Fig. 3-14.)

1) Insert part 🅐 of the dew sensor ❽ into the notch ⓫ of the mechanism chassis, then secure it with the screw ❼.
2) Mount the connector ❿.
3) Clamp the harness ⓯ of the dew sensor ❽ with the reinforcing the claw ⓰ of the plate SS assembly (See Fig. A).
4) Insert the connector ❷ and the flexible board ❶ into the hole ⓬ of the mechanism chassis, align the drum assembly ❻ with the two dowels ⓭ and secure it with the three screws ❺.
5) Align the axle ground terminal ❷ with the two dowels ⓮ of the mechanism chassis and secure it with the screw ❸.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ❷ and the flexible board ❶.

Note:
- Take care not to cut the flexible board ❶ or the harness ⓯.
- Take care not to touch the head tip ❾.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

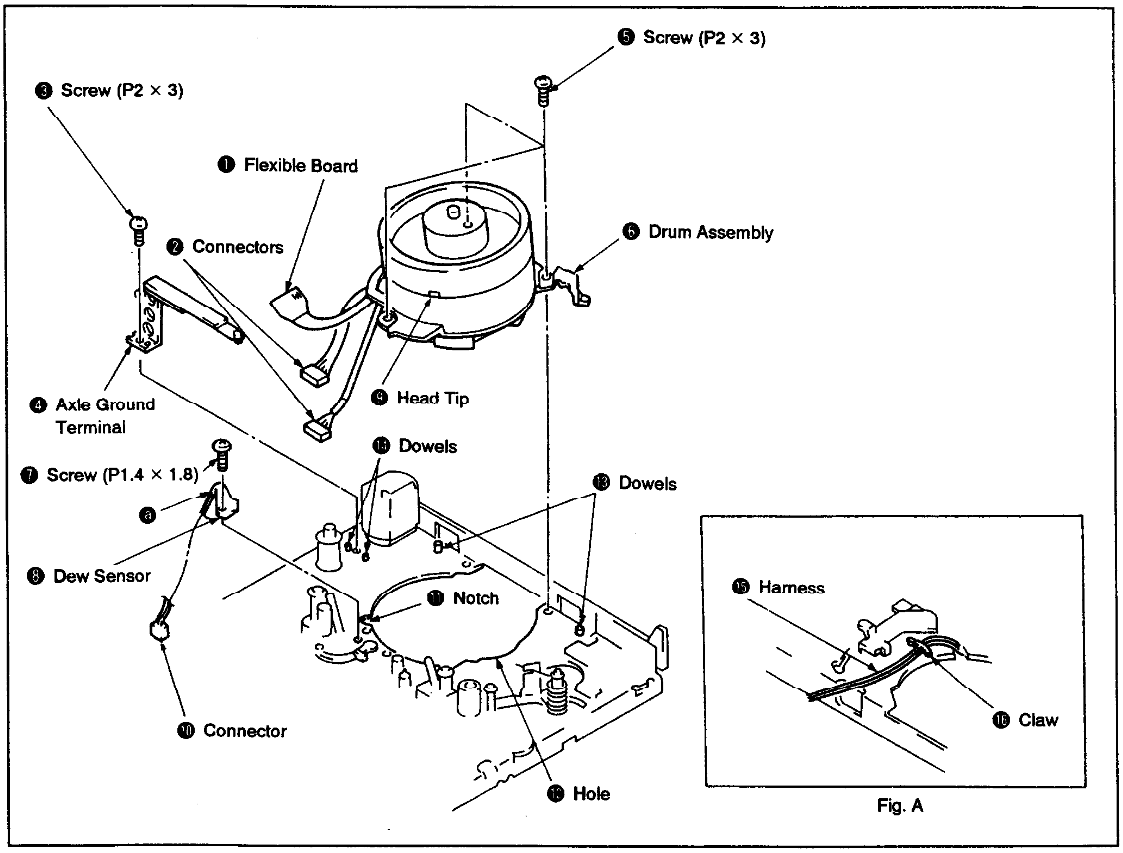

❺ Screw (P2 × 3)
❸ Screw (P2 × 3)
❶ Flexible Board
❷ Connectors
❻ Drum Assembly
❹ Axle Ground Terminal
❾ Head Tip
⓮ Dowels
❼ Screw (P1.4 × 1.8)
ⓐ
⓭ Dowels
❽ Dew Sensor
⓫ Notch
⓯ Harness
⓰ Claw
❿ Connector
⓬ Hole
Fig. A

Fig. 3-14.

3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the STOP mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓬.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

Note: When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓰ to the arrow Ⓐ side of the switch lever assembly ❹.

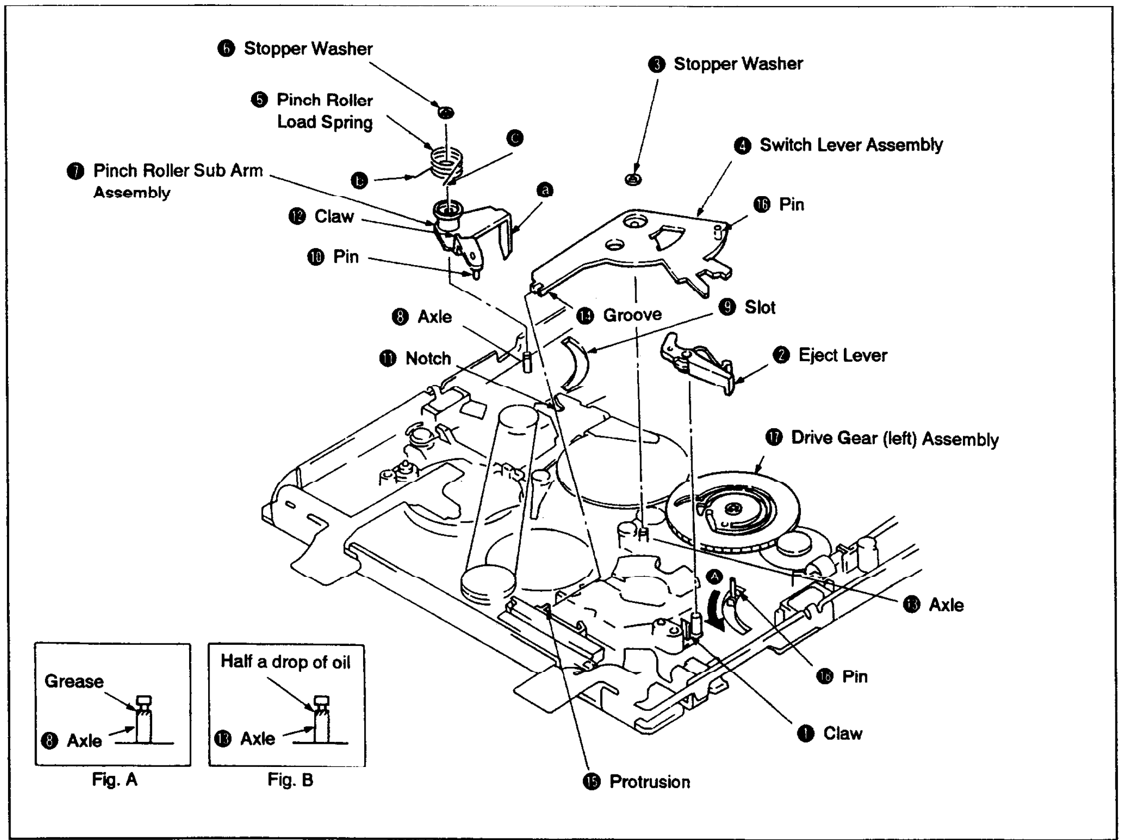

❻ Stopper Washer
❺ Pinch Roller Load Spring
ⓒ
❼ Pinch Roller Sub Arm Assembly
ⓑ
ⓐ
⓬ Claw
❿ Pin
❸ Stopper Washer
❹ Switch Lever Assembly
⓰ Pin
❽ Axle
⓮ Groove
❾ Slot
⓫ Notch
❷ Eject Lever
⓱ Drive Gear (left) Assembly
Ⓐ
⓭ Axle
⓰ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Fig. A
Half a drop of oil
⓭ Axle
Fig. B

Fig. 3-15.

3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

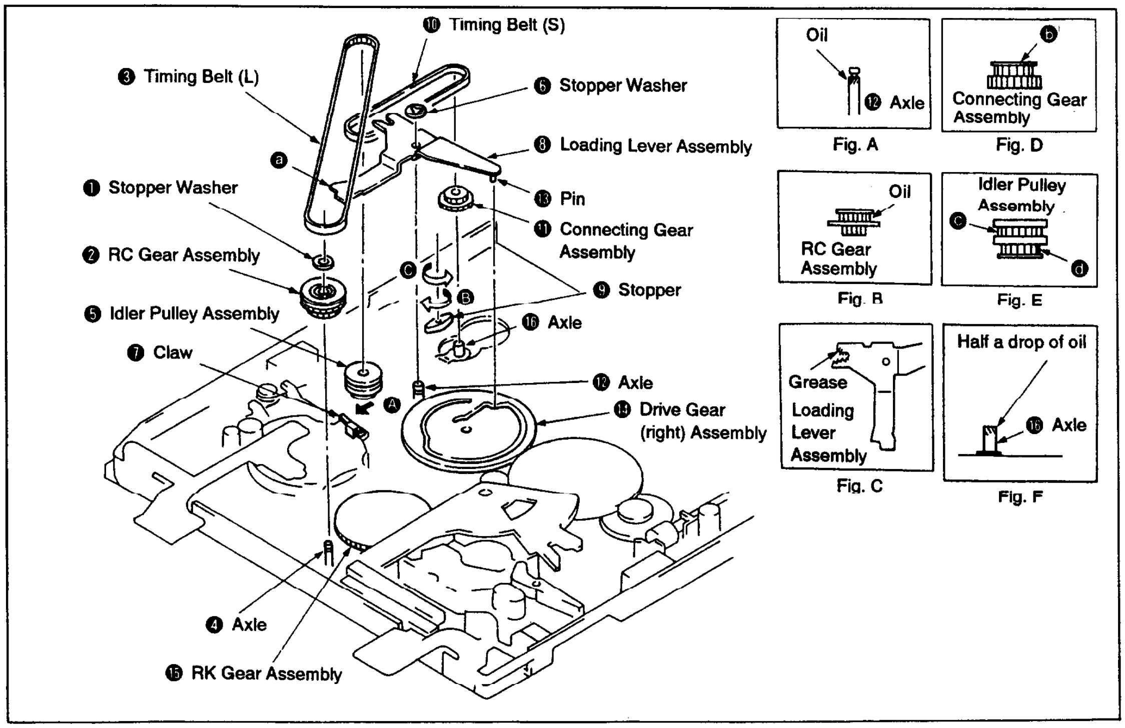
1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺.
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow Ⓐ.
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow Ⓑ.
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺.

Note: When removing the connecting gear ⓫ , take care not touch the flange section ⓑ.

2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺. (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰.
4) Turn the stopper ❾ in the direction of the arrow Ⓒ as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬, secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮.
7) Install the stopper washer ❻.
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺. (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯.
10) Install the stopper washer ❶.
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.



❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
ⓐ
❽ Loading Lever Assembly
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
Ⓒ
❾ Stopper
Ⓑ
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
⓬ Axle
Ⓐ
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

Note: When removing the idler pulley ❷, take care not to touch the flange section ⓐ. (See Fig. C.)

2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓰ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓰, then secure it with the stopper washer ❶.
9) Mount the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

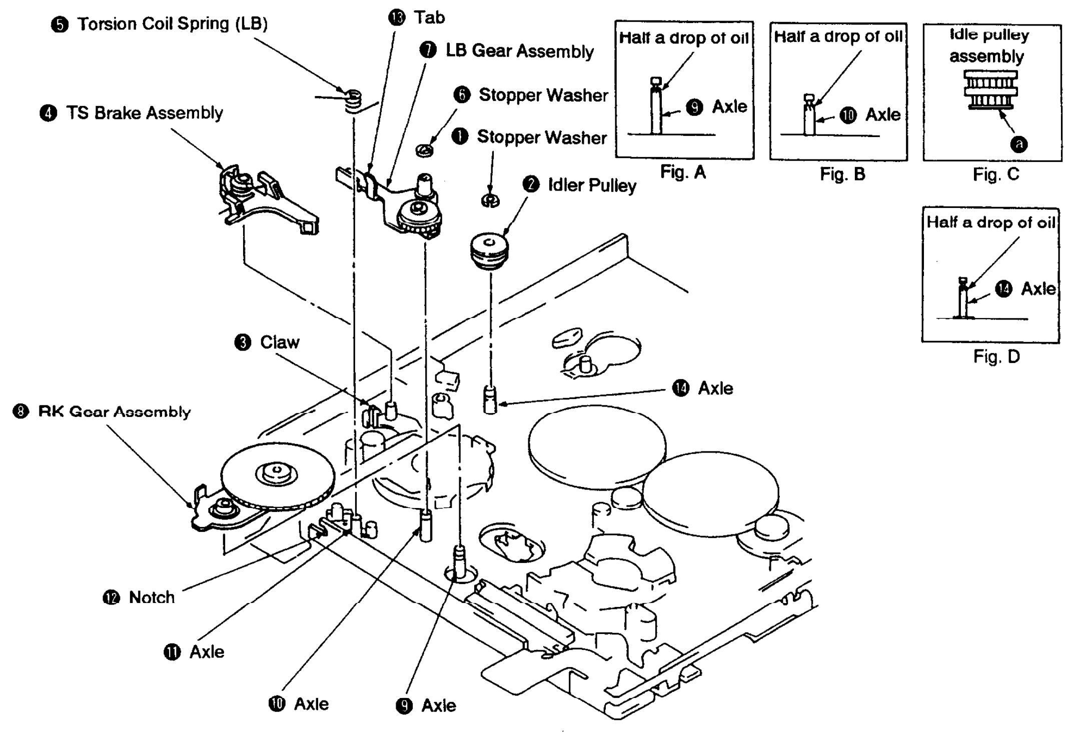

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❻ Stopper Washer
❶ Stopper Washer
❹ TS Brake Assembly
❷ Idler Pulley
Half a drop of oil
❾ Axle
Fig. A
Half a drop of oil
❿ Axle
Fig. B
Idle pulley assembly
ⓐ
Fig. C
Half a drop of oil
⓮ Axle
Fig. D
❸ Claw
⓮ Axle
❽ RK Gear Assembly
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle

Fig. 3-17.

3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶, then remove the UL gear ❷.
3) Remove the UL arm ❸, the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺.
4) Remove the UL brake ❻.

2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻.
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹.
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻.
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿.
6) Install the stopper washer ❶.
7) Mount the switch lever assembly as described in section 3-14.

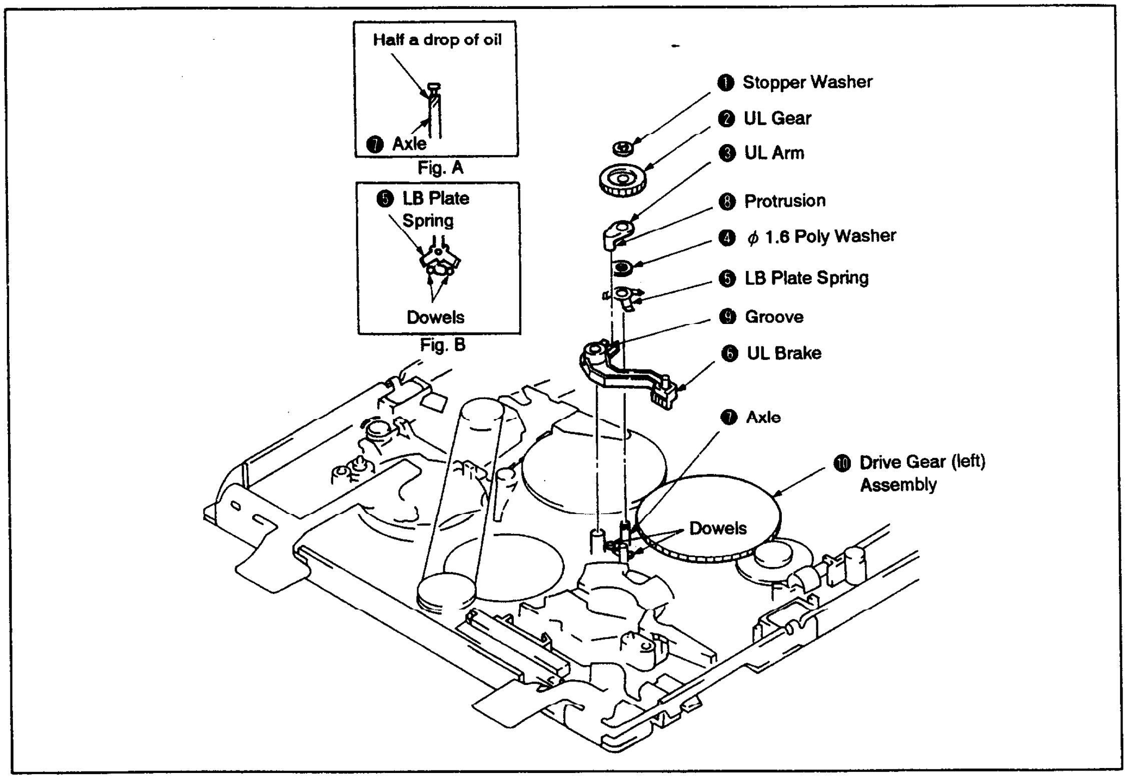

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (right) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate TT ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (right) assembly ❼.

2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾, axle ❿ and dowel ⓮ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow 🅐 to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽, and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the ⓐ part with the ⓑ part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸.
8) Install the stopper washer 1.5 ❻.
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾, then secure with the screw ❶.
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g·cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

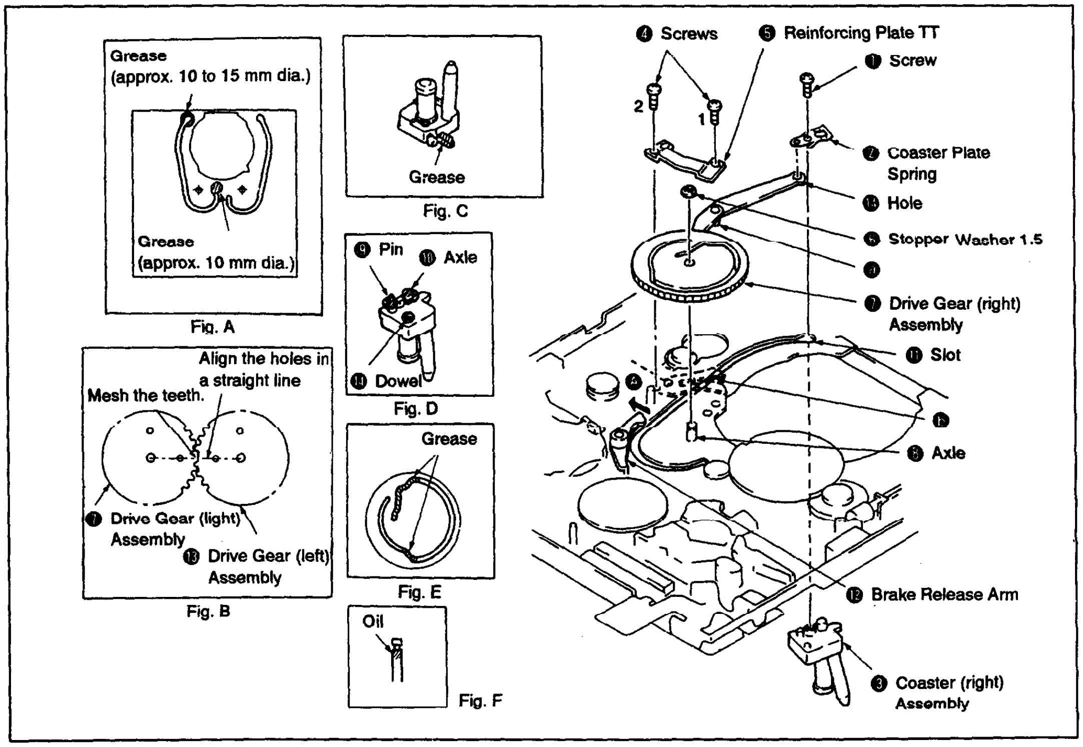

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
Fig. B
Grease
Fig. C
❾ Pin
❿ Axle
⓮ Dowel
Fig. D
Grease
Fig. E
Oil
Fig. F
❹ Screws
❺ Reinforcing Plate TT
❶ Screw
2
1
❷ Coaster Plate Spring
⓭ Hole
❻ Stopper Washer 1.5
ⓐ
❼ Drive Gear (right) Assembly
⓫ Slot
🅐
ⓑ
❽ Axle
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. 3-19.

3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ①, then remove the coaster plate spring ② and the coaster (left) assembly ③.
7) Remove the two screws ④, then remove the reinforcing plate SS assembly ⑤.
8) Remove the stopper washer 1.5 ⑥, then remove the drive gear (left) assembly ⑦.

2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ⑧ (See Fig. E).
3) Grease pin ⑨, axle ⑩ and dowel ⑮ of the coaster (left) assembly ③ (See Fig. B).
4) Mount by aligning the pin ⑨ and the axle ⑩ with the slot ⑪ of the mechanism chassis.
5) Fit the drive gear (left) assembly ⑦ to the axle ⑧, and mount so that the gear engages with the wheel gear ⑫ and the UL gear ⑬.
6) Align the ⓐ part with the slot ⑪, and the hole ⑭ with the pin ⑨ of the coaster (left) assembly ③.
7) Install the stopper washer 1.5 ⑥.
8) Mount by aligning the coaster plate spring ② with the axle ⑩ and pin ⑨ of the coaster (left) assembly ③, then secure with the screw ①.
9) Mount the reinforcing plate SS assembly ⑤ aligning it with the dowel ⑮, then tighten the two screws ④ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ① should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ③ and the coaster plate spring ② will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

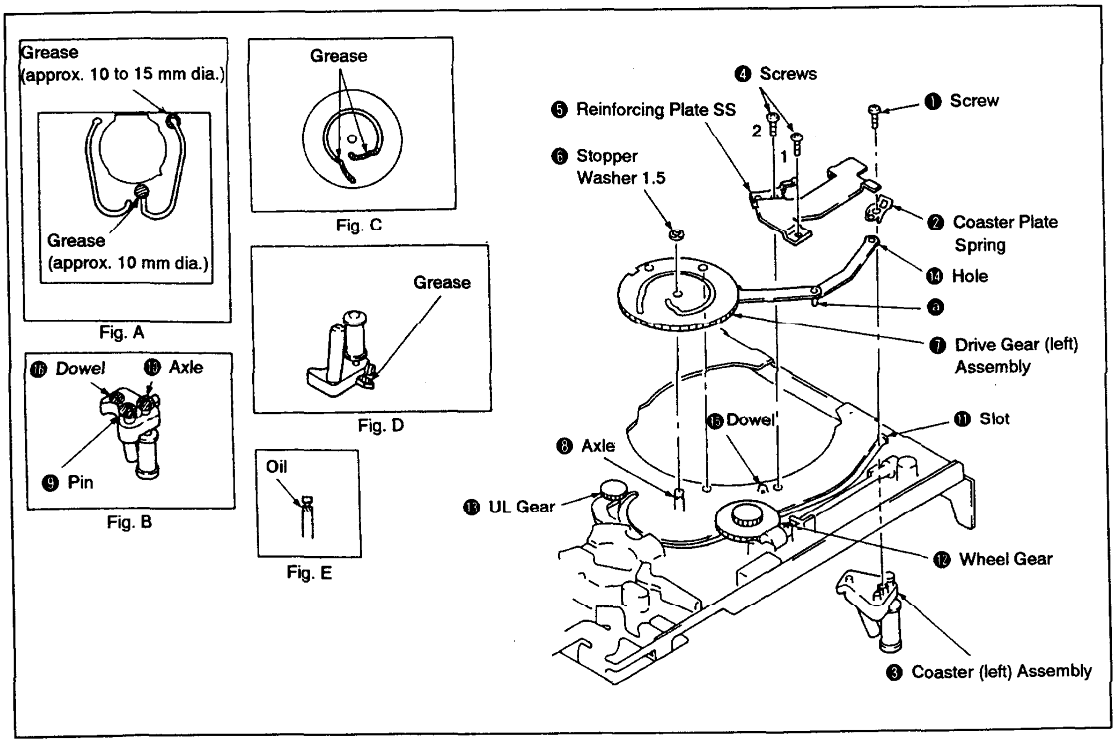

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
⑮ Dowel
⑩ Axle
⑨ Pin
Fig. B
Grease
Fig. C
Grease
Fig. D
Oil
Fig. E
④ Screws
⑤ Reinforcing Plate SS
2
1
① Screw
⑥ Stopper Washer 1.5
② Coaster Plate Spring
⑭ Hole
ⓐ
⑦ Drive Gear (left) Assembly
⑮ Dowel
⑪ Slot
⑧ Axle
⑬ UL Gear
⑫ Wheel Gear
③ Coaster (left) Assembly

Fig. 3-20.

3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

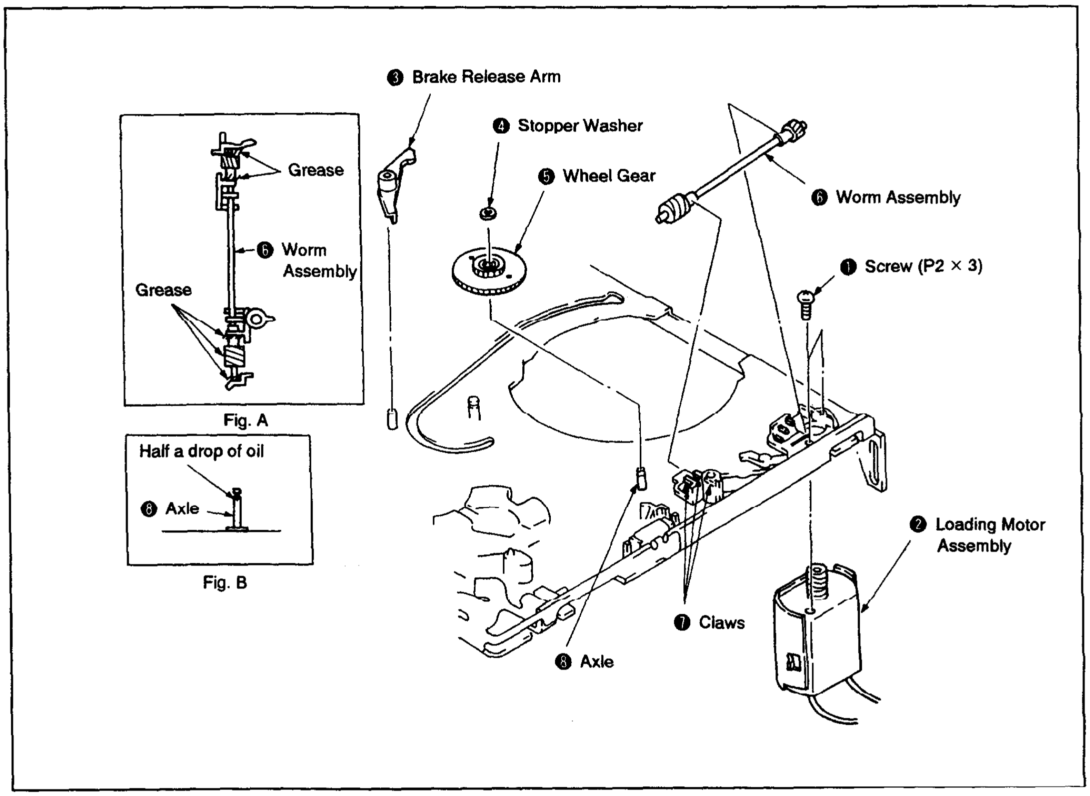

Grease
❻ Worm Assembly
Grease
Fig. A
Half a drop of oil
❽ Axle
Fig. B
❸ Brake Release Arm
❹ Stopper Washer
❺ Wheel Gear
❻ Worm Assembly
❶ Screw (P2 × 3)
❷ Loading Motor Assembly
❼ Claws
❽ Axle

Fig. 3-21.

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ⓐ, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

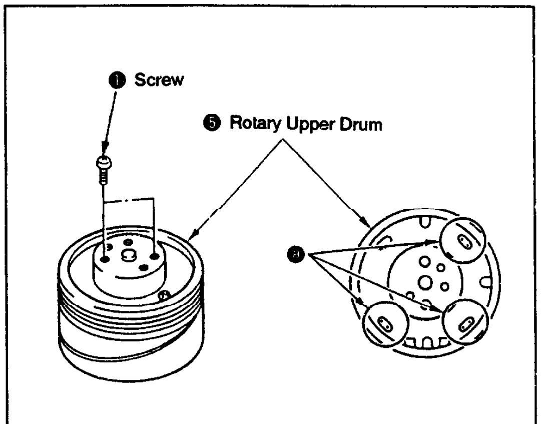


Fig. 3-22.

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.

   Note: Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (ⓐ in Fig. 3-22).

   Note: Take care that no solder flows below the board.

Note: After installing, be sure to perform tape path adjustment as described in section 4.

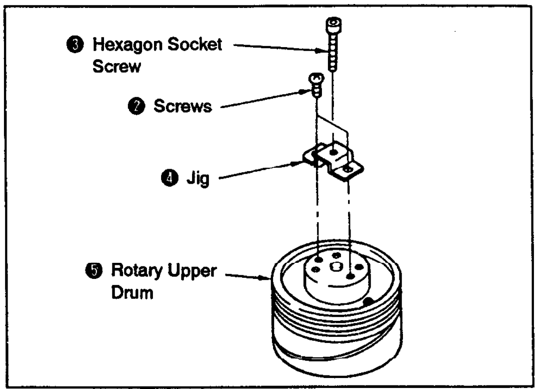


Fig. 3-23.

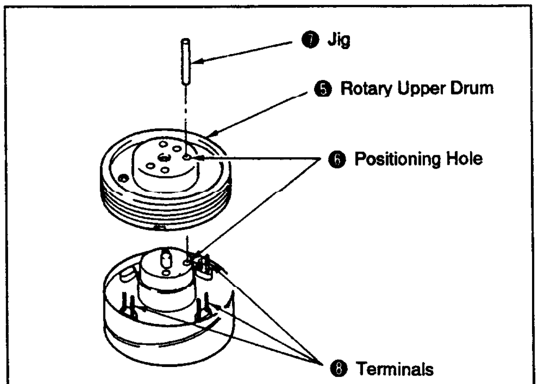


Fig. 3-24.

3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

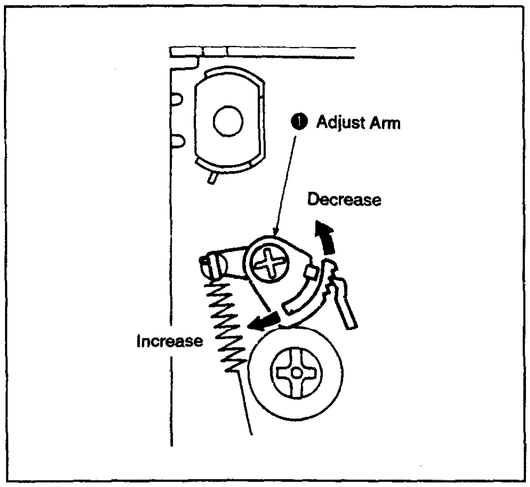


Fig. 3-25.

3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

4. TAPE PATH ADJUSTMENT

[The Track Shift Mode]

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

4-1. TRACK SHIFT MODE SETTING

[Setting Procedure]

- Connect the TEST A and TEST B terminals to the COM terminal.
  Example:
  NTSC ········ GV-8
  PAL ·········· GV-8E
  Connect Pins ① and pin ③ of CN017 on the
  { SV-34 board (GV-8) / SV-35 board (GV-8E) } to pin ② of it. (See Fig. 4-1)

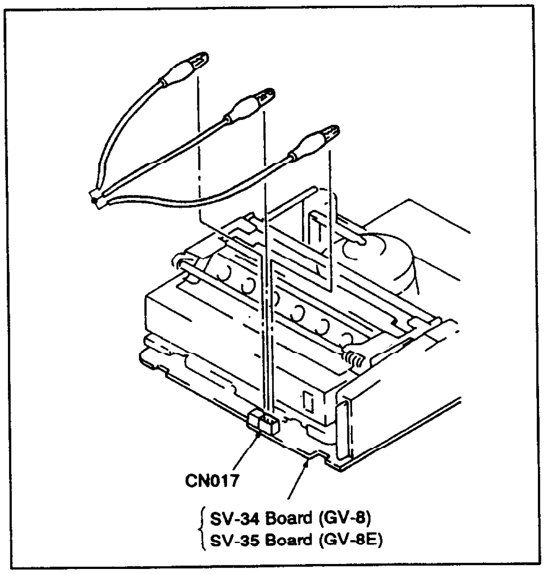
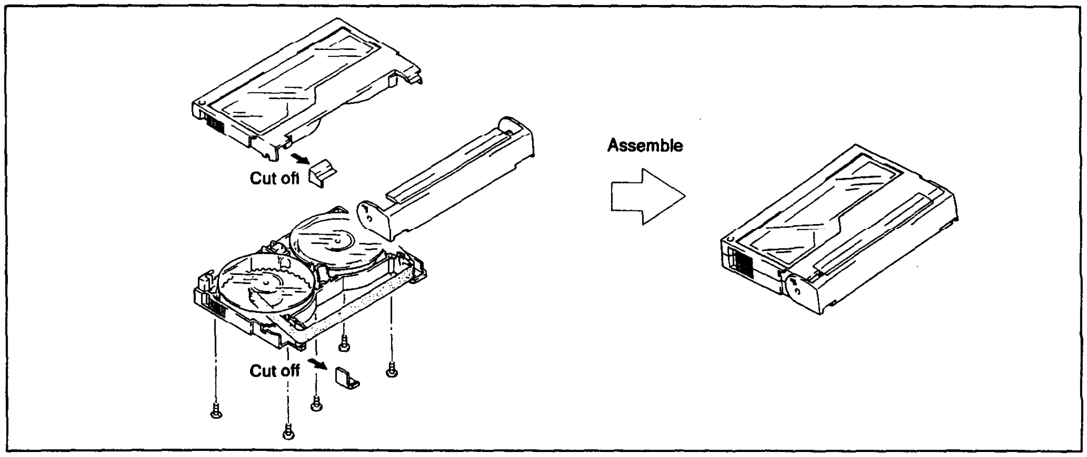


Fig. 4-1.

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).

Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Cut off
Assemble

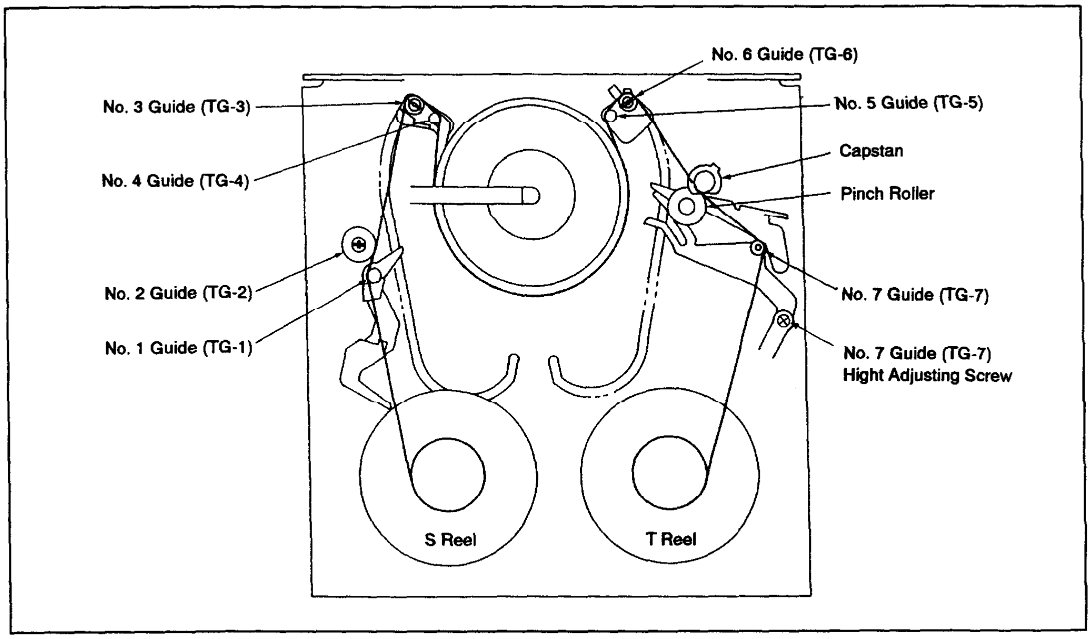

No. 6 Guide (TG-6)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
Capstan
No. 4 Guide (TG-4)
Pinch Roller
No. 2 Guide (TG-2)
No. 7 Guide (TG-7)
No. 1 Guide (TG-1)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

4-2. PREPARATIONS FOR ADJUSTMENT

1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.

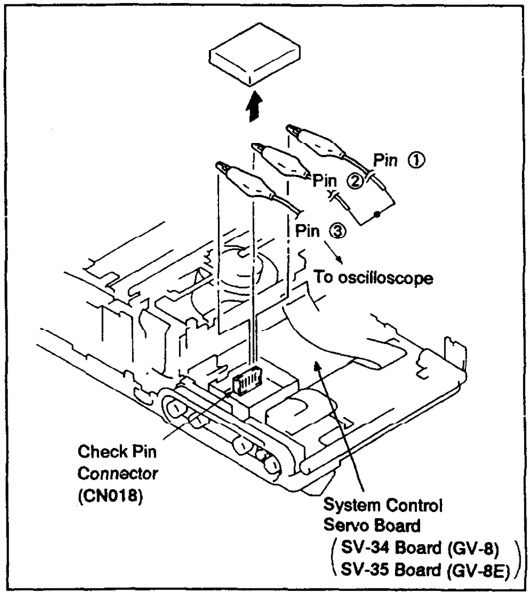

Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
(SV-34 Board (GV-8)
SV-35 Board (GV-8E))

Fig. 4-3.

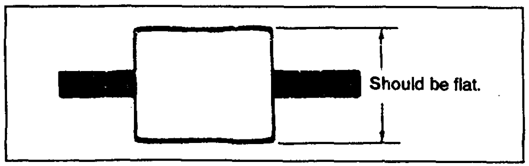

Should be flat.

Fig. 4-4.

4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

Note: Take care not to loosen lockscrews too much, since guides come loose easily.

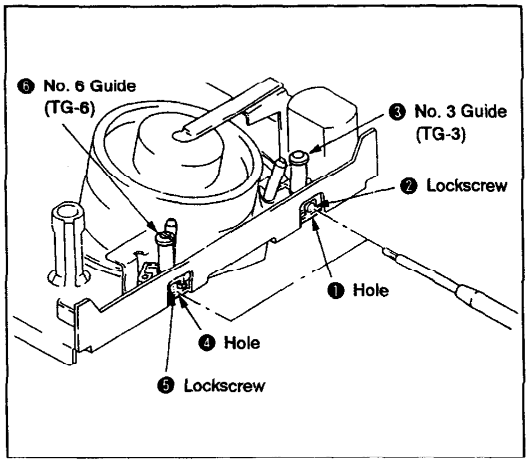

❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

4-4. TRACKING FINE ADJUSTMENT (See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

Note: The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

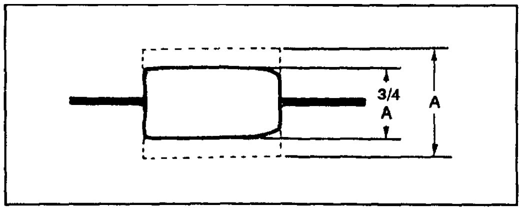


Fig. 4-6.

4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

4-5-1. No. 2 Guide (TG-2) Height Presetting (See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

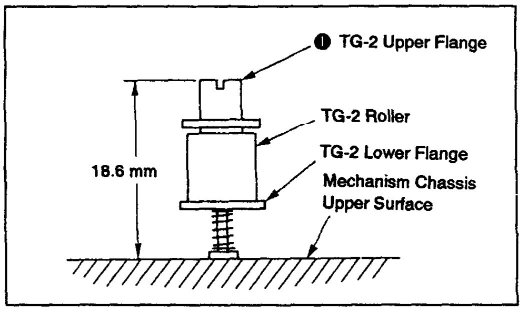


Fig. 4-7.

[Reference]
This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Counterclockwise
	Lower	Clockwise

4-5-2. No. 2 Guide (TG-2) Adjustment (See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.
   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

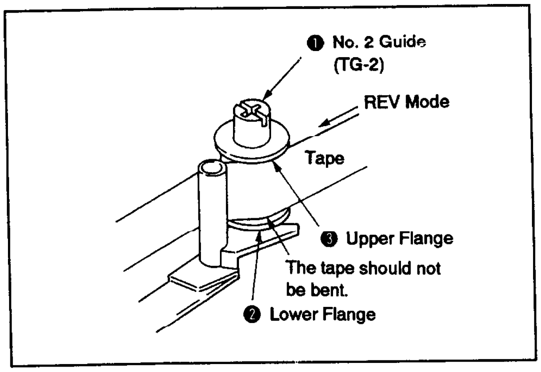

❶ No. 2 Guide (TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

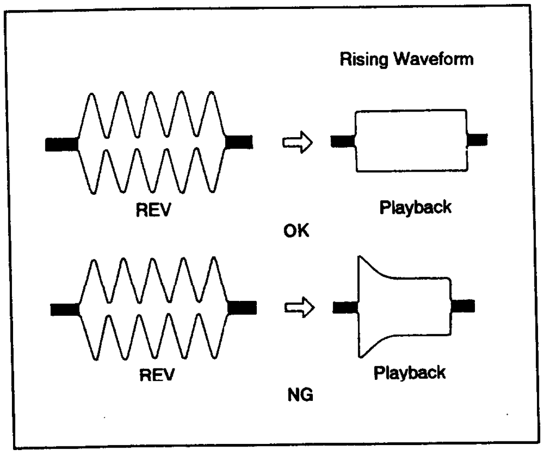

Rising Waveform
REV
Playback
OK
REV
Playback
NG

Fig. 4-9.

4-6. No. 7 GUIDE (TG-7) ADJUSTMENT (See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less). If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

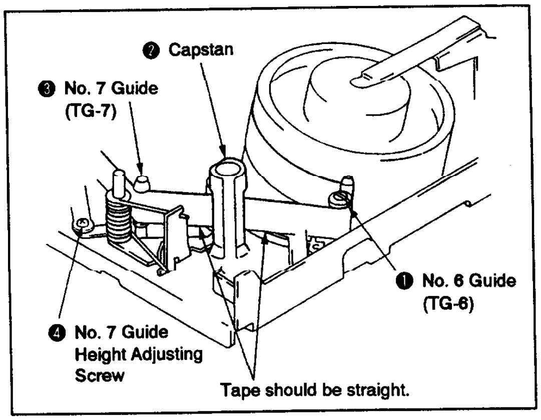

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
❹ No. 7 Guide Height Adjusting Screw
Tape should be straight.

Fig. 4-10.

4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

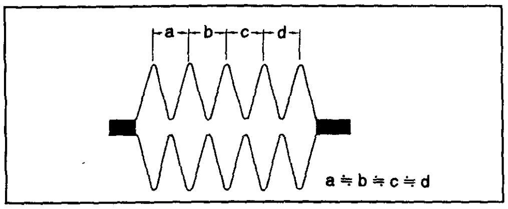


Fig. 4-11.

4-8. CHECK AFTER ADJUSTMENT

4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

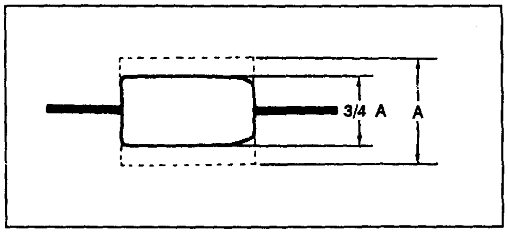


Fig. 4-12.

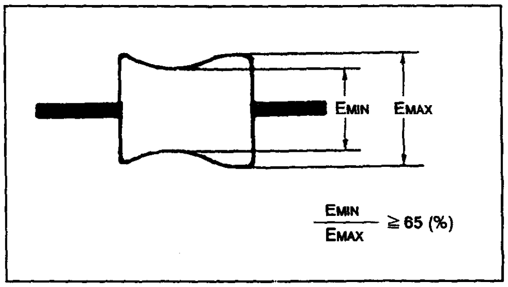


Fig. 4-13.

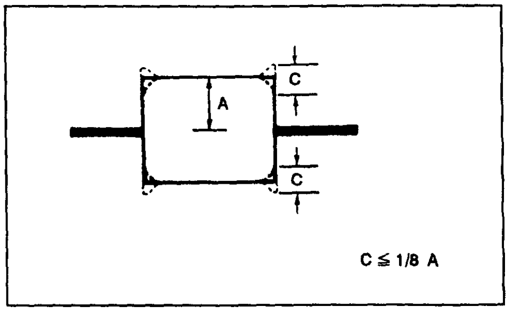


Fig. 4-14.

4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

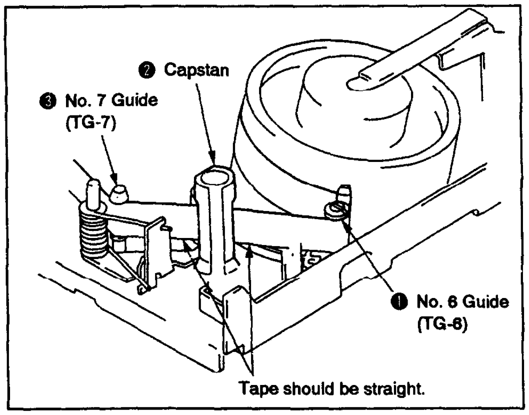

② Capstan
③ No. 7 Guide
(TG-7)
① No. 6 Guide
(TG-6)
Tape should be straight.

Fig. 4-15.

4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

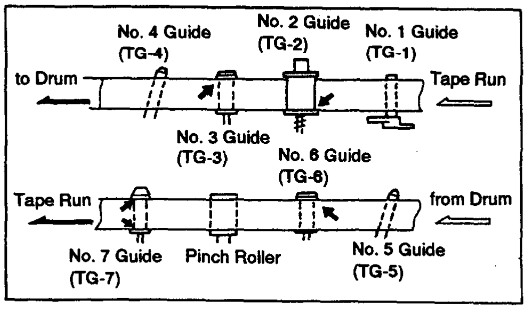

No. 4 Guide
(TG-4)
No. 2 Guide
(TG-2)
No. 1 Guide
(TG-1)
to Drum
Tape Run
No. 3 Guide
(TG-3)
No. 6 Guide
(TG-6)
Tape Run
from Drum
No. 7 Guide
(TG-7)
Pinch Roller
No. 5 Guide
(TG-5)

Fig. 4-16.